

US EPA RECORDS CENTER REGION 5



501447

REMOVAL ACTION GROUNDWATER MONITORING PROGRAM PLAN

GRANVILLE SOLVENTS SITE GRANVILLE, OHIO

Submitted to

**The United States Environmental Protection Agency
Emergency Response Branch, Region V
Chicago, Illinois 60673**

Developed for the

**Granville Solvents PRP Group
One Columbus, 10 West Broad Street
Columbus, Ohio 43215-3435**

**March 15, 1995
revised April 11, 1995
revised June 12, 1995**

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An Air & Water Technologies Company

June 12, 1995

Mr. Edward J. Hanlon, Project Coordinator
U.S. Environmental Protection Agency, Region 5
Office of Superfund, Remedial & Enforcement Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Subject: **Granville Solvents Site Removal Action**
Submittal of Revised Groundwater Monitoring Program Plan and Responses to U.S.
EPA's Comments Dated May 12, 1995

Dear Mr. Hanlon:

Metcalf & Eddy, on behalf of the Granville Solvents PRP Group, submit to U.S. EPA the enclosed revised Groundwater Monitoring Program Plan. Also included are responses to comments provided by the U.S. EPA on May 12, 1995 regarding this Groundwater Monitoring Program Plan submitted April 11, 1995.

Copies have been sent to Mr. Mike Anastasio (U.S. EPA), Mr. Steve Acree (U.S. EPA), Mr. Fred Myers (Ohio EPA), and Mr. Doug Plunkett (Village of Granville).

If you have questions regarding this submittal, please contact Michael Raimonde or me at (614) 890-5501.

Respectfully,

METCALF & EDDY, INC.

Michael L. Raimonde
for

Gerald R. Myers
Vice President/Project Coordinator

cc: B. Pfefferle, Chairman - Steering Committee (w/ enc)
S. Acree, U.S. EPA (w/ enc)
F. Myers, Ohio EPA (w/ enc)
D. Plunkett, Granville (w/ enc)
M. Raimonde, M&E

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Prepared by:



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**March 15, 1995
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1.0 INTRODUCTION

This Groundwater Monitoring Program Plan has been developed for the Granville Solvents Site (GSS) in Granville, Ohio by Metcalf & Eddy, Inc. (M&E) on behalf of the Granville Solvents Site PRP Group. This document was originally submitted on March 15, 1995. The plan had been previously modified based on review comments from the Ohio EPA and the U.S. EPA discussed at a meeting between the GSS PRP Group, M&E, and the U.S. EPA and Ohio EPA on March 20, 1995. The current plan has been modified to account for comments provided by comments provided by the U.S. EPA on May 12, 1994. Responses to those comments are provided under separate cover and are incorporated by this reference.

Subsection V.2.e.1 of the Administrative Order of Consent (AOC) required that by December 20, 1994, the PRP Group install and operate a groundwater extraction and treatment system. As required, the system began operation on December 20, 1994. The installation and start-up of the system were discussed in the January 31, 1995 Aquifer Pumping Test Report. The system is currently operating.

The Aquifer Pumping Test Report showed that the extraction wells are creating capture zones sufficient to prevent further migration of impacted groundwater toward the municipal well field. The report presented data for the first several samples of the treatment system influent and effluent which confirmed that the air stripper is effectively treating the extracted water.

This plan outlines a proposal to construct a performance monitoring network for the groundwater extraction and treatment system. New groundwater monitoring wells and piezometers are proposed to be installed and sampled to continue to refine the evaluation of the impacted plume of groundwater and to verify the performance of the groundwater extraction and treatment system. A regular sampling program is proposed using some of the existing wells and new wells to detect any changes in the plume configuration and concentrations.

A Groundwater Treatability Test is ongoing and will continue until June 20, 1995. The groundwater monitoring proposed in this plan will be used to develop system operating parameters and aid in optimizing the system. A report on the treatability test will be submitted following the test.

2.0 GROUNDWATER MONITORING SYSTEM

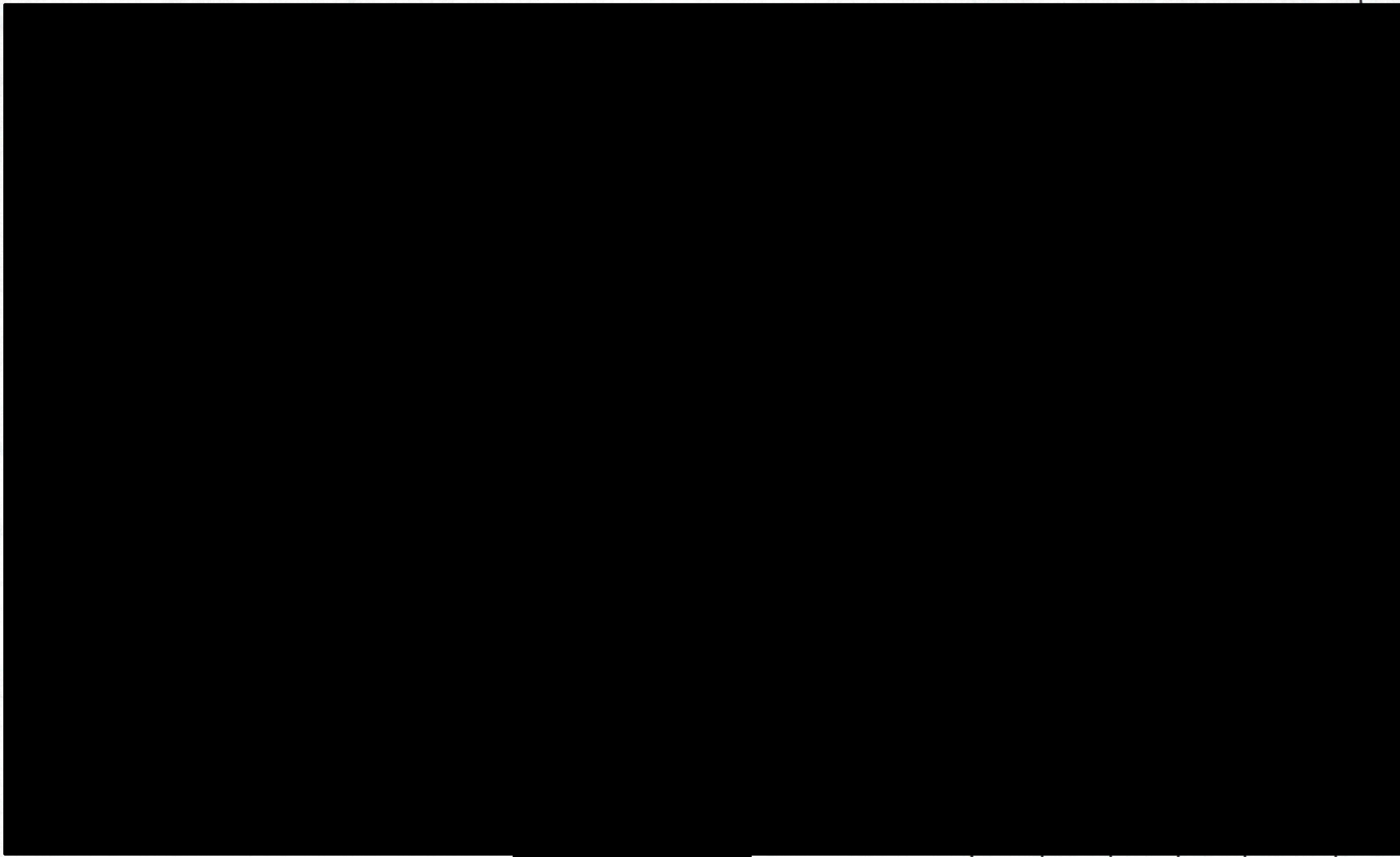
The existing monitoring well network is comprised of 15 monitoring wells installed by the Ohio EPA and one monitoring well installed by M&E (GSS-MW2). The purpose of those wells was to detect the presence of organic constituents in the groundwater and determine their extent of migration. An expanded groundwater monitoring program is herein proposed to better define the plume and routinely monitor groundwater for changes in the plume configuration and concentration. Figure 1 shows the locations of existing and proposed groundwater monitoring wells. Also shown on Figure 1 is the extent of the groundwater plume as currently defined, based on the occurrence of any parameter above its drinking water maximum contaminant level (MCL).

2.1 NEW GROUNDWATER MONITORING WELLS

Based on discussion of the U.S. EPA and Ohio EPA comments on the initial version of this plan and comments provided on May 12, 1995, eleven groundwater monitoring wells are proposed to define the extent of the plume to the north, south, and east of the GSS. Three new deep wells are proposed within the GSS to provide additional information on the vertical distribution of contaminant concentrations and to define vertical hydraulic gradients. All new wells and piezometers will be designated GSS-MW(X) or GSS-P(X). Because most of these wells will be installed off the Granville Solvents Inc. property, the locations are tentative, pending access approval by the land owners.

Monitor well GSS-MW2 was installed by M&E in November 1994 to define the southwestern margin of the plume. The boring log and well construction diagram for GSS-MW2 are contained in the December 1, 1994 Operational Plan for the aquifer pumping test. Groundwater from GSS-MW2 was sampled on February 21, 1995 and analyzed for Volatile Organic Compounds (VOCs). Chlorinated VOCs were not detected at GSS-MW2. Consequently, the southwestern limit of the plume has now been defined. Monitoring of GSS-MW2 will be continued.

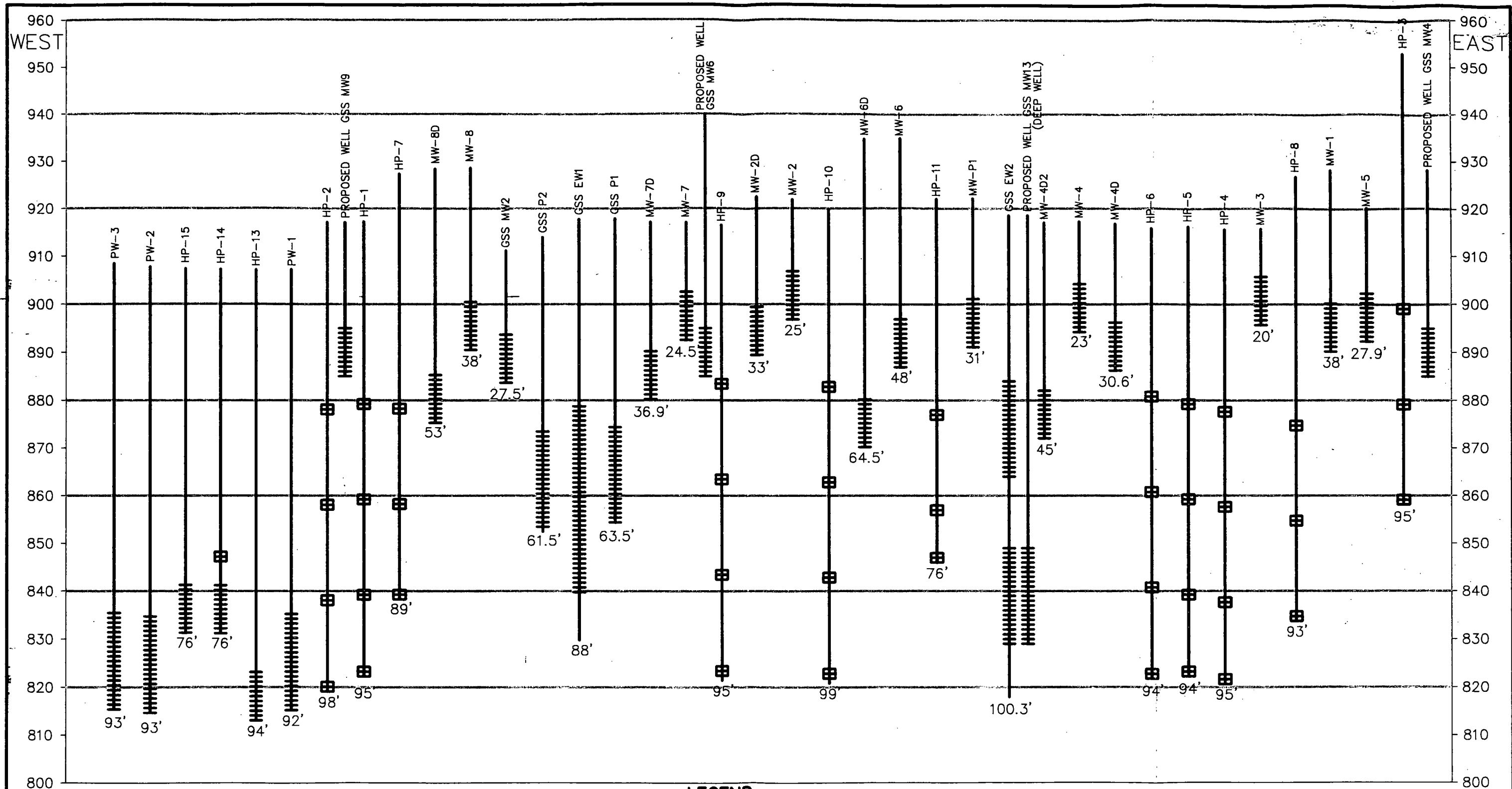
Based on discussions at the March 20, 1995 meeting and site visit, and subsequent comments on May 12, 1995, a total of eleven additional monitor wells will be installed to more fully define the groundwater plume to the north (4 wells), south (1 well), and east (3 wells), and to provide a sentinel network between the GSS and the Village well field (3 wells). Plans for installation of one of the new wells, GSS-MW1, were discussed in the December 1, 1994 Operational Plan and M&E comment response documents.



However, access to the property has not been granted by the property owner. The well is proposed to be placed about 100 feet north of MW-8 to provide information on the northern extent of the plume (Figure 1) pending granting of access to the property.

Ten additional monitoring wells, GSS-MW3 through GSS-MW12, are proposed to be installed at the locations shown on Figure 1, subject to being provided access to the property. Monitoring wells GSS-MW3, GSS-MW3D, and GSS-MW4 would be located east of the Cherry Street Bridge to delineate the eastern margin of the plume and provide additional monitoring of the vertical distribution of the plume. The U.S. EPA and Ohio EPA have suggested a fourth new well in this area. However, considering the limited area and access difficulties to the east of the bridge, it is herein proposed that two locations are sufficient with a deep well pairing GSS-MW3 to monitor the water quality in the area. Proposed monitoring wells GSS-MW5, GSS-MW6, and GSS-MW11 would be placed north of Palmer Lane to define the northern extent of the plume along with GSS-MW1 discussed above. GSS-MW11 has been added as a proposed well since the March 15 version of this plan, as recommended by the U.S. EPA and Ohio EPA. Well GSS-MW7 would be installed to determine the southern plume margin. At the March 20 meeting, the U.S. EPA and Ohio EPA initially suggested two new wells to the south of the GSS rather than one. Considering the limited area in question and the difficulties with access to the wooded area near Raccoon Creek, U.S. EPA and Ohio EPA agreed during the March 20 site visit that one well is sufficient. Wells GSS-MW8 through GSS-MW10 would be installed between extraction well GSS-EW1 and Village production well PW-1 to provide a "sentinel" network beyond the western margin of the plume. The new wells will also be useful in defining the groundwater flow directions and flow divides between the extraction and Village production wells.

To determine the most appropriate depths for the screens of the new wells, previously collected data were compiled and reviewed. Figure 2 shows the screen depths and elevations for the existing wells, piezometers, extraction wells, and Village Production wells. Also shown are the depths where samples were collected in the Hydropunch® borings. Figures 3 through 8 illustrate the depth profiles for PCE, TCE, 1, 1, 1, TCA, cis-1, 2 DCA, 1, 1-DCE, acetone based on sampling results of groundwater monitoring wells and Hydropunch® boring locations.



LEGEND

+
 DEPTH WHERE WATER SAMPLE COLLECTED

-
 WELL SCREEN LENGTH

|
 TOTAL DEPTH OF WELL OR BOREHOLE BELOW GROUND SURFACE

HORIZONTAL SCALE: NOT TO SCALE VERTICAL SCALE: 1"=20'



GRANVILLE SOLVENTS SITE GROUNDWATER MONITORING WELLS, PIEZOMETERS, HYDROPUNCHES AND EXAMPLES OF PROPOSED NEW WELLS GRANVILLE, OHIO

Project Number 016688-0009-013	
File Name WS1	Figure 2

Plate 1 shows the distribution of total Volatile Organic Compounds, excluding acetone, for samples collected at four different depth intervals (0 to 20 feet, 20 to 40 feet, approximately 60 feet, and approximately 80 feet) below the water table. Plates 2 through 7 show the distribution of PCE, TCE, 1, 1, 1, TCA, cis-1, 2 DCA, 1, 1-DCE, acetone. It is clear from the Figures 3 through 8 and maps in Plates 1 through 7, that the highest concentrations occur in the upper part of the aquifer, within 20 feet of the water table. Most of the existing wells are screened in this interval. This is supported by data from existing well nests where higher concentrations have been detected in the shallower wells. Plates 1 through 7 show that with increasing depth, the concentrations decline and the extent of the plume is reduced. Consequently, 10 of the 13 new wells (GSS-MW1, GSS-MW3, and GSS-MW4 through GSS-MW11) will be screened from 5 to 10 feet below the water table, in the zone of highest constituent concentrations.

Three deep wells are proposed within the GSS to provide further information on vertical hydraulic gradients and potential changes in the vertical distribution of constituents during the groundwater extraction. One new well, GSS-MW12 will be installed next to existing wells MW-2 and MW-2D. The second new deep well, GSS-MW13 will be installed at the MW-4 well cluster, near extraction well GSS-EW2. The third well will be paired with new monitoring well GSS-MW3. The deep wells will be screened from 50 to 70 feet below the water table (same as lower screen in GSS-EW2).

Data from the sampling of the new wells will be summarized in a report that will delineate the extent of the groundwater plume (discussed below).

2.2 EXISTING GROUNDWATER MONITORING WELLS

Fifteen existing monitoring wells were installed during previous investigations by the Ohio EPA. Of these wells, nine are of the necessary location and construction to be incorporated into the proposed groundwater monitoring program (Table 1). Six wells are not of appropriate construction or are no longer necessary for monitoring water quality, MW-2, MW-3, MW-4, MW-6D, MW-7, and MW-8D, as noted on Table 1. Well MW-2 is adjacent to MW-2D which will be retained in the monitoring system. The screened intervals of MW-2 and MW-2D partially overlap and the wells show similar water levels. Also, the chemical analysis of groundwater collected from the wells have shown similar constituent concentrations. Well MW-3 is completed in a shallow zone of perched groundwater as indicated by a water level consistently about 10 feet higher than that of the other wells in the area. The chemical

TABLE 1
GRANVILLE SOLVENTS SITE
GROUNDWATER MONITORING PROGRAM

Well	Quarterly	Semi-Annually	Annually	Water Levels Only	To Be Abandoned
MW-1			✓		
MW-2				✓	
MW-2D			✓		
MW-3				✓	
MW-4					✓
MW-4D			✓		
MW-4D2			✓		
MW-5**			✓		
MW-6			✓		
MW-6D***				✓	
MW-7				✓	
MW-7D			✓		
MW-8	✓				
MW-8D***				✓	
MW-P1			✓		
GSS-MW2		✓			
HP-13 (Piezometer)				✓	
HP-14 (Piezometer)				✓	
HP-15 (Piezometer)				✓	
GSS-P1 (Piezometer)				✓	
GSS-P2 (Piezometer)				✓	
GSS-MW1*	✓				

Well	Quarterly	Semi-Annually	Annually	Water Levels Only	To Be Abandoned
GSS-MW3*		✓			
GSS-MW3D*		✓			
GSS-MW4*		✓			
GSS-MW5*		✓			
GSS-MW6*	✓				
GSS-MW7*		✓			
GSS-MW8*	✓				
GSS-MW9*	✓				
GSS-MW10*	✓				
GSS-MW11*		✓			
GSS-MW12*			✓		
GSS-MW13*			✓		
GSS-P3 (Piezometer)*				✓	
GSS-P4 (Piezometer)*				✓	
TOTAL SAMPLED WELLS	6	6+7=13	13+10=23		

* Proposed new well or piezometer

** Monitoring of MW-5 is provisional on results from GSS-MW-3 and GSS-MW-4

*** Sampled one time during the first annual event

analysis of groundwater collected from MW-3 indicates low volatile organic compound (VOC) concentrations while deeper samples from adjacent Hydropunch® boring HP-4 indicates higher concentrations believed more characteristic of the groundwater locally. The screened interval of well MW-4 partially overlaps with that of adjacent well MW-4D and the chemical analysis of groundwater collected from both wells indicate similar analytical results.

The concrete pad at MW-4 has deteriorated and the flush mount protector does not provide a good seal against surface water infiltration. Therefore, MW-4 will be abandoned.

Well MW-6D will not be monitored except for one time only during the first annual event because sampling of adjacent well MW-6 will provide data more representative of the highest concentrations within the aquifer at that location. MW-6 has historically shown significantly higher constituent levels than MW-6D. Well MW-6, which is screened slightly below the water table will continue to be monitored. Well MW-8D will no longer be monitored for similar reasons except for one time during the first annual event. The water quality at the MW-8/MW-8D cluster is best represented by sampling of the shallow well, MW-8. Low level chlorinated compounds have been detected in MW-8 while samples from MW-8D have been below detection for these compounds. Existing well MW-7 will not be monitored because the well screen is too shallow. The MW-7 screen intersects the water table, the well typically contains only a few feet of water, and the well may be dry at times. Adjacent well MW-7D, screened slightly below the water table, will be retained in the monitoring system. MW-7 and MW-7D have not shown detection of chlorinated VOCs in the past.

All of the existing wells will be periodically checked for integrity. Any noted problems will be remedied. If a given well has questionable integrity, the condition will be noted and abandonment of the well may be proposed to the U.S. EPA and Ohio EPA.

3.0 EXTRACTION SYSTEM HYDRAULIC PERFORMANCE EVALUATION

3.1 PERFORMANCE MONITORING APPROACH

Monthly water levels will be measured in all piezometers, monitor wells, extraction wells, observation wells, and accessible Village of Granville production wells for the first 12 months of operation and quarterly thereafter. If necessary as a result of operational changes to the Village well field production, monthly measurements will resume for one quarter. The water level data will be converted to elevations and used to construct potentiometric maps to define the groundwater flow directions and flow divides between the pumping centers. The potentiometric data will show if a groundwater divide exists between the extraction wells and the well field dividing the impacted groundwater from the non-impacted groundwater. If a groundwater divide is indicated between the impacted groundwater and production well PW-1 by the groundwater level measurements, then the performance standard will continue to be met.

3.2 PERFORMANCE MONITORING NETWORK

The performance monitoring network is proposed to consist of the potentiometric data collected from three groundwater monitoring wells, GSS-MW8, GSS-MW9, and GSS-MW10, and four piezometers GSS-P1, GSS-P2, GSS-P3, and GSS-P4. These are the key wells for defining the hydraulic gradient in the area between GSS-EW1 and Village well PW-1.

The December 1, 1994 Aquifer Test Operational Plan discussed the installation of two piezometers, GSS-P1 and GSS-P2 in November 1994 (locations shown on Figure 1). These piezometers were installed for use during the aquifer testing and for defining water levels close to extraction well GSS-EW1. They also aid in the interpretation of the potentiometric surface in the immediate vicinity of extraction well GSS-EW1 and will be used as part of the performance monitoring well network. Two additional piezometers, GSS-P3 and GSS-P4, will be installed to provide water level data at the locations shown on Figure 1. GSS-P3 will be placed southwest of the Granville Water Treatment Building south of GSS-MW10 to aid in defining the groundwater flow divide between extraction well GSS-EW1 and the Village well field. GSS-P4 will be placed in the well field, midway between existing piezometer HP-15 and Village well PW-2. Water level data from GSS-P4 will help define flow divides between PW-1, Village well PW-2, and GSS-EW1. The piezometers will not be sampled for water quality.

4.0 WELL INSTALLATION PROCEDURES

4.1 CLEANING OF DRILLING EQUIPMENT

Before and after each well installation, the drill rig and all down hole equipment will be cleaned with a high pressure, high temperature wash. Decontamination water and solids will be contained on a constructed pad, tested and properly disposed. Solids will be collected in 55-gallon steel drums and the water will be collected and disposed through the air stripper currently operating on site.

4.2 DRILLING PROCEDURES

To ensure proper screening of the wells, a soil boring will be drilled before each well and piezometer installation. Each of the borings will be sampled through 4¼-inch inside diameter (ID) hollow stem augers from the ground surface to the targeted zone with a split-spoon sampler at two foot intervals. All soil cuttings will be properly contained. Soil cuttings from borings within areas of known soil impact will be tested and properly disposed.

4.3 MONITORING WELL AND PIEZOMETER CONSTRUCTION

All the new groundwater monitoring wells except the two proposed deep wells will be constructed similarly to recently installed GSS-MW2. Riser casing will consist of flush threaded 2-inch inside diameter (ID) Schedule 40 PVC. The well screens will be constructed from flush threaded 2-inch inside diameter, 10 foot long, 0.01-inch factory machine slot schedule 40 PVC. Monitor well screens will be placed from 5 to 15 feet below the water table. Proposed wells GSS-MW4, GSS-MW6, and GSS-MW9 are shown on Figure 2 to illustrate examples of the planned screen depths and elevations (Note that not all proposed wells are shown on Figure 2). The deep wells will be constructed of the same materials but will be screened from 50 to 70 feet below the water table. Proposed well GSS-MW13 is shown on Figure 2 to illustrate the proposed screen interval for the deep wells.

Piezometers will be constructed using riser casing that will consist of flush threaded 2-inch inside diameter (ID) Schedule 40 PVC. The piezometer screens will be constructed from flush threaded 2-inch inside diameter, 10 foot long, 0.01-inch factory machine slot schedule 40 PVC. Piezometer screens will be placed from approximately 45 to 55 feet below the water table.

Construction procedures for both the groundwater monitoring wells and piezometers will follow the following protocol. Once the desired monitoring depth is reached, the well screen and casing will be set in place. A sand pack will then be emplaced around the screen by slowly adding sand into the annular space and simultaneously removing the augers. The sand pack will not extend more than 2 feet above the top and below the bottom of the screen. The annular space above the sand pack will be sealed with a minimum 2-foot thick bentonite seal using bentonite pellets. The bentonite seal will be allowed to hydrate for a minimum of two hours prior to proceeding. The annular space above the bentonite seal will be grouted with cement/bentonite grout injected through a side discharging tremie pipe placed a short distance above the bentonite seal. The grout will consist of the following: seven gallons of water mixed with three pounds of bentonite powder to which 94 pounds of portland type I cement is added. The grout will extend from the bentonite seal to three feet below the ground surface.

The riser casing will extend approximately two feet above the ground surface or flush with the surface depending on the surface conditions. Wells completed above grade will use a 6-inch ID locking protective casing five feet in length set in concrete approximately two and one-half feet below grade and extending above the riser casing. The surface of the concrete will be fashioned so that water will drain to the sides. A weep hole will be drilled near the ground surface to prevent water accumulation between the protective casing and riser casing. In areas prone to traffic, steel protective posts may be installed as necessary. Wells completed at grade will consist of a flush-mount well cover installed into a concrete anchor/pad. The concrete anchor will slope away from the well to promote drainage away from the wellhead.

4.4 SURVEYING

An elevation reference point will be marked on the top of the riser casing of the well. The ground surface and top of casing (reference point) elevations for all wells will be determined to within 0.001 foot mean sea level (AMSL) by a licensed surveyor.

4.5 WELL DEVELOPMENT

No sooner than 48 hours after installation, each monitoring well and piezometer will be developed. The wells will be developed by the pump and surge method by alternatively removing water with a properly decontaminated stainless steel surge bailer and pump. Development will continue until the turbidity of

the water is substantially reduced based on visual inspection. Development water will be contained and placed in the air stripper holding tank for treatment.

4.6 GROUNDWATER MONITORING WELL SAMPLING PUMPS/BAILERS

To reduce the possibility of cross-contamination, dedicated bladder pumps, 2-inch submersible pumps, or stainless-steel bailers will be placed in each well that will be part of the monitoring network.

4.7 MONITORING WELL ABANDONMENT

Any well abandonment will be performed by physically removing the wells from the substrate by over-drilling with hollow stem augers around the casings until the casings can be removed by the drill rig. The original drill hole will be drilled out to the depth reported in the log. Once the casing has been removed and the augers advanced to the original boring depth, the hole will be pressure grouted to the surface with cement/bentonite grout injected through a tremie pipe. A record of the well abandonment will be kept on site by the project geologist and supplied to the EPA. Because all the existing monitor wells except GSS-MW2 were installed by the Ohio EPA, the abandonment may also be performed by the Ohio EPA. The GSS PRP Group will discuss with the Ohio EPA which party will conduct the abandonment before any abandonment is performed.

5.0 SAMPLING AND ANALYSIS

The following sections describe the procedures for collection and analysis of groundwater and treatment system samples and the measurement of water levels.

5.1 GROUNDWATER SAMPLING PARAMETERS AND FREQUENCY

Subsets of wells will be monitored quarterly, semi-annually, and annually as listed in Table 1. Six wells (MW-8, GSS-MW1, GSS-MW-6, GSS-MW8, GSS-MW9, GSS-MW10) will be sampled quarterly. These wells were selected for the most frequent sampling because they are located near the leading edge of the plume, in the direction of the well field. Five wells (GSS-MW2, GSS-MW3, GSS-MW4, GSS-MW5, GSS-MW7, and GSS-MW11) will be sampled semiannually. The semiannual wells are located near the northern, eastern, and southern fringes of the plume. Data for semiannual and quarterly wells will allow monitoring for changes in the plume configuration. Eight wells, located generally within or near the areas of highest concentrations (MW-1, MW-2D, MW-4D, MW-4D2, MW-5, MW-6, MW-7D, MW-P1, GSS-MW12 and GSS-MW13) will be sampled annually primarily to monitor for changes in concentrations over time due to removal of the most highly impacted water at GSS-EW2. The need for sampling of MW-5 will be contingent on the results from wells located further east (GSS-MW3 and GSS-MW4).

All groundwater samples will be analyzed for VOCs using U.S. EPA method 524.2. Table 2 provides a list of the monitoring parameters and detection limits.

Consideration was given to the need for monitoring for semivolatile organic compounds (SVOC's) and metals. On January 30, 1991 and March 26, 1991, groundwater samples were analyzed for SVOC's. The U.S.EPA state in the Screening Site Inspection Site Evaluation of November 29, 1993 that no positively identified SVOC's were detected in any of the samples. Samples of the influent from the extraction wells have been collected since the treatment system has been in operation. The influent and effluent data are listed on Table 3. The only SVOC detected in the treatment system influent and effluent is bis(2-ethylhexyl)phthalate. This compound has been reported in all influent and effluent samples at concentrations ranging from 0.9 to 45 $\mu\text{g/l}$, with most detections estimated at below 10 $\mu\text{g/l}$. As noted in the January 31, 1995 Aquifer Pumping Test Report, it is likely that the detection of bis(2-ethylhexyl)phthalate is attributable to the plastics used in the treatment system piping. Because SVOC's

TABLE 2
MONITORING PARAMETERS AND DETECTION LIMITS

Parameter	Method	Detection Limits	Holding Time	Preservation	Bottle Size/Type
Volatile Organic Compounds					
Vinyl Chloride	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
1,1-Dichloroethene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Acetone	EPA 524.2	5 µg/l	7 days	HCL	2-40 ml glass vials
Carbon Disulfide	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
trans-1,2-Dichloroethene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
1,1-Dichloroethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
1,2-Dichloroethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
cis-1,2-Dichloroethene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
2-Butanone	EPA 524.2	5 µg/l	7 days	HCL	2-40 ml glass vials
Chloromethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Chloroform	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
1,1,1-Trichloroethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Benzene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Trichloroethene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Bromodichloromethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Toluene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Tetrachloroethene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
2-Hexanone	EPA 524.2	5 µg/l	7 days	HCL	2-40 ml glass vials
Dibromochloromethane	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Ethylbenzene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
m & p Xylene	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials
Xylene (Total)	EPA 524.2	1 µg/l	7 days	HCL	2-40 ml glass vials

METALS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (c)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Aluminum	50 to 100 (d)	< 200	U	< 200	U	12.1	B	13.3	B	11	U	11.1	U	11.1	U	11	U
Antimony	6	< 60	U	< 60	U	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U
Arsenic	50	< 10	U	< 10	U	2.5	U	2.6	B	2.5	U	2.5	U	2.5	U	2.5	U
Barium	2000	< 200	U	< 200	U	104	B	105	B	112	B	112	B	113	B	114	B
Beryllium	4	< 5	U	< 5	U	0.07	U	0.1	B	0.07	U	0.07	U	0.07	U	0.07	U
Cadmium	5	< 5	U	< 5	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Calcium	NA	103000		102000		98400		98700		110000		110000		99100		101000	
Chromium	100	< 10	U	< 10	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cobalt	NA	< 50	U	< 50	U	0.9	U	0.9	U	0.89	U	0.9	U	0.9	U	0.89	U
Copper	1000(d)	< 25	U	< 25	U	20.3	B	0.83	B	0.79	U	0.8	U	0.8	U	0.79	U
Iron	300(d)	1980		1980		1680		1410		1160		1410		832		951	
Lead	15	< 3	U	< 3	U	49.1		1	U	1.2	B	1	U	1	U	0.99	U
Magnesium	NA	32000		31000		31100		31200		34200		34100		31000		31700	
Manganese	50(d)	82		81		77.1		76.1		73.2		73.3		65.8		67.2	
Mercury	2	< 0.2	U	< 0.2	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
Nickel	100	< 40	U	< 40	U	7.9	B	1.3	B	1.2	U	1.2	U	1.2	U	1.2	U
Potassium	NA	< 5000	U	< 5000	U	2690	B	2700	B	2900	B	2860	B	2700	B	2710	B

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
 (b) - These samples were collected from the influent water from the stripper.
 (c) - These samples were collected from the effluent water from the stripper.
 (d) - Secondary Maximum Contaminant Levels.
 U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

- B - This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
 MCLs - Maximum Contaminant Levels, November 1994.
 NA - Not Available

TABLE 3 (Continued)
METALS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (c)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Selenium	50	< 5	U	< 5	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
Silver	NA	< 10	U	< 10	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.69	U
Sodium	NA	30000		27000		23400		23500		26100		25900		22800		23600	
Thallium	2	< 10	U	< 10	U	3.7	B	3	U	3	U	3.1	B	3	U	3	U
Vanadium	NA	< 50	U	< 50	U	0.9	U	0.9	U	0.89	U	0.9	U	0.9	U	0.89	U
Zinc	5000(d)	52		< 20	U	200		16.5	B	14.5	B	2.7	B	10.1	B	2.4	B

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (continued)
METALS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95 (b)		F1-24-95 (c)		N2-15-95 (b)		F2-15-95 (c)		N3-15-95 (b)		F3-15-95 (c)	
Date Sampled		1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Aluminum	50 to 100 (d)	11.1	U	11	U	18.7	B	15.2	B	11.1	U	20.4	B
Antimony	6	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U	2.9	U
Arsenic	50	5.5	U	3.1	B	3.2	B	2.5	U	2.5	U	3.4	B
Barium	2000	112	B	111	B	111	B	110	B	114	B	114	B
Beryllium	4	0.11	B	0.1	B	0.07	U	0.07	U	0.07	B	0.09	B
Cadmium	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Calcium	NA	113000		113000		109000		107000		113000		112000	
Chromium	100	0.5	U	0.5	U	0.61	B	0.5	U	0.5	U	0.5	U
Cobalt	NA	0.9	U	0.89	U	0.9	U	0.9	U	0.9	U	0.9	U
Copper	1000(d)	0.8	U	0.8	U	4.4	B	0.8	U	0.8	U	0.8	U
Iron	300(d)	1990		979		2370		1130		1120		1180	
Lead	15	4.6		0.99	U	2.8	B	1	U	1	U	1	U
Magnesium	NA	34400		34300		33800		33200		34500		34200	
Manganese	50(d)	65.6		65.4		76.6		68.9		67.7		67.5	
Mercury	2	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.1	B
Nickel	100	2.3	B	1.2	U	2.8	B	1.3	B	1.2	U	1.2	U
Potassium	NA	2640	B	2630	B	2730	B	2680	B	2650	B	2650	B

Key:
(a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
(b) - These samples were collected from the influent water from the stripper.
(c) - These samples were collected from the effluent water from the stripper.
(d) - Secondary Maximum Contaminant Levels.
U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL
B - This indicates that the reported value is less than the Contract Required
Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
MCLs - Maximum Contaminant Levels, November 1994.
NA - Not Available

TABLE 3 (Continued)
METALS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (c)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Selenium	50	< 5	U	< 5	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U	2.7	U
Silver	NA	< 10	U	< 10	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.69	U
Sodium	NA	30000		27000		23400		23500		26100		25900		22800		23600	
Thallium	2	< 10	U	< 10	U	3.7	B	3	U	3	U	3.1	B	3	U	3	U
Vanadium	NA	< 50	U	< 50	U	0.9	U	0.9	U	0.89	U	0.9	U	0.9	U	0.89	U
Zinc	5000(d)	52		< 20	U	200		16.5	B	14.5	B	2.7	B	10.1	B	2.4	B

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 1 (continued)
Semi-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled	MCL s	12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Acenaphthene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2,4-Trichlorobenzene	70	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorobenzene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachloroethane	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-chloroethyl)ether	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	600	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	600	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	75	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Fluoranthene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl phenyl ether	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Bromophenyl phenyl ether	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-chloroisopropyl)ether	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (Continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled	MCL s	12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
bis(2-chloroethoxy)methane	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorobutadiene	1(d)	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Isophorone	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Naphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Nitrobenzene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-nitrosodiphenylamine	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-nitrosodipropylamine	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-ethylhexyl)phthalate	NA	2	J B	3	J B	2	J B	4	J B	2	J	4	J B	8	J	9	J
Benzyl butyl phthalate	100	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-butyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-octyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Diethyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dimethyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	0.1	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	0.2	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required
Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 1 (continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled	MCL s	12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Benzo(b)fluoranthene	0.2	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	0.2	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chrysene	0.2	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Anthracene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Fluorene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Phenanthrene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	0.3	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-C,D)pyrene	0.4	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pyrene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzyl Alcohol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloroaniline	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Dibenzofuran	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylnaphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

- B - This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
- MCLs - Maximum Contaminant Levels, November 1994.
- NA - Not Available

TABLE 3 (Continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled	MCL s	12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
3-Nitroaniline	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
4-Nitroaniline	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
2,4,6-Trichlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
p-Chloro-m-cresol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitrophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Nitrophenol	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
2,4-Dinitrophenol	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
4,6-Dinitro-2-methylphenol	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
Pentachlorophenol	1	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
Phenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzoic Acid	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U
2-Methylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Methylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled	MCL s	12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
2,4,5-Trichlorophenol	NA	50	U	50	U	26	U	26	U	25	U	25	U	25	U	25	U

Key:
(a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
(b) - These samples were collected from the influent water from the stripper.
(c) - These samples were collected from the effluent water from the stripper.
(d) - Secondary Maximum Contaminant Levels.
U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL
B - This indicates that the reported value is less than the Contract Required
Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
MCLs - Maximum Contaminant Levels, November 1994.
NA - Not Available

TABLE 3 (Continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95		F1-24-95		N2-15-95		F2-15-95		N3-15-95		F3-15-95	
Date Sampled	MC Ls	1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Accnaphthylene	NA	10	U	10	U	10	U	10	U	10	U	10	U
1,2,4-Trichlorobenzene	70	10	U	10	U	10	U	10	U	10	U	10	U
Hexachlorobenzene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Hexachloroethane	NA	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-chloroethyl)ether	NA	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	600	10	U	10	U	10	U	10	U	10	U	10	U
1,3-Dichlorobenzene	600	10	U	10	U	10	U	10	U	10	U	10	U
1,4-Dichlorobenzene	75	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	NA	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrotoluene	NA	10	U	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Fluoranthene	NA	10	U	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl phenyl ether	NA	10	U	10	U	10	U	10	U	10	U	10	U
4-Bromophenyl phenyl ether	NA	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-chloroisopropyl)ether	NA	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-chloroethoxy)methane	NA	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
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Shading indicates exceedance of MCL or SMCL

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Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE (continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95		F1-24-95		N2-15-95		F2-15-95		N3-15-95		F3-15-95	
Date Sampled	MC Ls	1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Hexachlorobutadiene	1(d)	10	U	10	U	10	U	10	U	10	U	10	U
Isophorone	NA	10	U	10	U	10	U	10	U	10	U	10	U
Naphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Nitrobenzene	NA	10	U	10	U	10	U	10	U	10	U	10	U
N-nitrosodiphenylamine	NA	10	U	10	U	10	U	10	U	10	U	10	U
N-nitrosodipropylamine	NA	10	U	10	U	10	U	10	U	10	U	10	U
bis(2-ethylhexyl)phthalate	NA	2	J	0.9	J	2	J B	2	J B	46	B	18	B
Benzyl butyl phthalate	100	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-butyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U
Di-n-octyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U
Diethyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U
Dimethyl phthalate	NA	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	0.1	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	0.2	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(b)fluoranthene	0.2	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	0.2	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

- B - This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
- MCLs - Maximum Contaminant Levels, November 1994.
- NA - Not Available

TABLE 3 (Continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95		F1-24-95		N2-15-95		F2-15-95		N3-15-95		F3-15-95	
Date Sampled	MC Ls	1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Chrysene	0.2	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Anthracene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Fluorene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Phenanthrene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Dibenz(a,h)anthracene	0.3	10	U	10	U	10	U	10	U	10	U	10	U
Indeno(1,2,3-C,D)pyrene	0.4	10	U	10	U	10	U	10	U	10	U	10	U
Pyrene	NA	10	U	10	U	10	U	10	U	10	U	10	U
Benzyl Alcohol	NA	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloroaniline	NA	10	U	10	U	10	U	10	U	10	U	10	U
Dibenzofuran	NA	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylnaphthalene	NA	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	NA	25	U	25	U	26	U	26	U	26	U	26	U
3-Nitroaniline	NA	25	U	25	U	26	U	26	U	26	U	26	U
4-Nitroaniline	NA	25	U	25	U	26	U	26	U	26	U	26	U
2,4,6-Trichlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
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- MCLs - Maximum Contaminant Levels, November 1994.
- NA - Not Available

TABLE 3 (continued)
SEMI-VOLATILES DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95		F1-24-95		N2-15-95		F2-15-95		N3-15-95		F3-15-95	
Date Sampled	MC Ls	1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
p-Chloro-m-cresol	NA	10	U	10	U	10	U	10	U	10	U	10	U
2-Chlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitrophenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
4-Nitrophenol	NA	25	U	25	U	26	U	26	U	26	U	26	U
2,4-Dinitrophenol	NA	25	U	25	U	26	U	26	U	26	U	26	U
4,6-Dinitro-2-methylphenol	NA	25	U	25	U	26	U	26	U	26	U	26	U
Pentachlorophenol	I	25	U	25	U	26	U	26	U	26	U	26	U
Phenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
Benzoic Acid	NA	25	U	25	U	26	U	26	U	26	U	26	U
2-Methylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
4-Methylphenol	NA	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	NA	25	U	25	U	26	U	26	U	26	U	26	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
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- (c) - These samples were collected from the effluent water from the stripper.
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Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (Continued)
VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCL s	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
Acetone	NA	4	J	23		5	U	5	U	25	U	5	U	25	U	5	U
Benzene	5	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Bromodichloromethane	80	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Bromoform	80	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Bromomethane	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
2-Butanone	NA	54		140		5	U	5	U	25	U	5	U	25	U	5	U
Carbon Disulfide	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Carbon Tetrachloride	5	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Chlorobenzene	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Chloroethane	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Chloroform	80	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Chloromethane	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Dibromochloromethane	80	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
1,1-Dichloroethane	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U

Key:
(a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
(b) - These samples were collected from the influent water from the stripper.
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MCLs - Maximum Contaminant Levels, November 1994.
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TABLE 3 (continued)
VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCL s	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
1,2-Dichloroethane	5	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
1,1-Dichloroethene	7	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
cis-1,2-Dichloroethene	70	0.5	U	0.5	U	1	U	1	U	39		2		37		2	
trans-1,2-Dichloroethene	100	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
1,2-Dichloropropane	5	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
cis-1,3-Dichloropropene	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
trans-1,3-Dichloropropene	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Ethylbenzene	700	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
2-Hexanone	NA	5	U	5	U	5	U	5	U	25	U	5	U	25	U	5	U
4-Methyl-2-Pentanone	NA	0.5	U	0.5	U	5	U	5	U	25	U	5	U	25	U	5	U
Methylene Chloride	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Styrene	100	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
1,1,1,2-Tetrachloroethane	NA	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Tetrachloroethene	5	0.5	U	0.5	U	1	U	1	U	79		1		66		0.9	J
Toluene	1000	1		0.4	J	1	U	1	U	5	U	1	U	5	U	1	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
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TABLE 3 (Continued)
VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N122094 (b)		F122094 (c)		I1395 (b)		E1395 (c)		N1-9-95 (b)		F1-9-95 (c)		N1-17-95 (b)		F1-17-95 (c)	
Date Sampled		12/20/94		12/20/94		1/3/95		1/3/95		1/9/95		1/9/95		1/17/95		1/17/95	
Units	MCL s	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter																	
1,1,1-Trichloroethane	200	0.5	U	0.5	U	1	U	1	U	21		1	U	15		1	U
1,1,2-Trichloroethane	5	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
Trichloroethene	5	3		0.5	U	1	U	1	U	28		1	U	22		1	U
Vinyl Chloride	2	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
m & p Xylenes	10	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U
o-Xylenes	10	0.5	U	0.5	U	1	U	1	U	5	U	1	U	5	U	1	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
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Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

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NA - Not Available

TABLE 3 (continued)
VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95 (b)		F1-24-95 (c)		N2-15-95 (b)		F2-15-95 (c)		N3-15-95 (b)		F3-15-95 (c)	
Date Sampled		1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Acetone	NA	1	J	5	U	33	U	5	U	12	U	5	U
Benzene	5	5	U	1	U	7	U	1	U	2	U	1	U
Bromodichloromethane	80	5	U	1	U	7	U	1	U	2	U	1	U
Bromoform	80	5	U	1	U	7	U	1	U	2	U	1	U
Bromomethane	NA	5	U	1	U	7	U	1	U	2	U	1	U
2-Butanone	NA	25	U	5	U	33	U	5	U	12	U	5	U
Carbon Disulfide	NA	5	U	1	U	7	U	1	U	2	U	1	U
Carbon Tetrachloride	5	5	U	1	U	7	U	1	U	2	U	1	U
Chlorobenzene	NA	5	U	1	U	7	U	1	U	2	U	1	U
Chloroethane	NA	5	U	1	U	7	U	1	U	2	U	1	U
Chloroform	80	5	U	1	U	7	U	1	U	2	U	1	U
Chloromethane	NA	5	U	1	U	7	U	1	U	2	U	1	U
Dibromochloromethane	80	5	U	1	U	7	U	1	U	2	U	1	U
1,1-Dichloroethane	NA	5	U	1	U	7	U	1	U	2	U	1	U
1,2-Dichloroethane	5	5	U	1	U	7	U	1	U	2	U	1	U
1,1-Dichloroethene	7	5	U	1	U	7	U	1	U	2	U	1	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
- (b) - These samples were collected from the influent water from the stripper.
- (c) - These samples were collected from the effluent water from the stripper.
- (d) - Secondary Maximum Contaminant Levels.
- U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (Continued)

VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95 (b)		F1-24-95 (c)		N2-15-95 (b)		F2-15-95 (c)		N3-15-95 (b)		F3-15-95 (c)	
Date Sampled		1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
cis-1,2-Dichloroethene	70	32		2		41		1	U	30		1	U
trans-1,2-Dichloroethene	100	5	U	1	U	7	U	1	U	2	U	1	U
1,2-Dichloropropane	5	5	U	1	U	7	U	1	U	2	U	1	U
cis-1,3-Dichloropropene	NA	5	U	1	U	7	U	1	U	2	U	1	U
trans-1,3-Dichloropropene	NA	5	U	1	U	7	U	1	U	2	U	1	U
Ethylbenzene	700	5	U	1	U	7	U	1	U	2	U	1	U
2-Hexanone	NA	25	U	5	U	33	U	5	U	12	U	5	U
4-Methyl-2-Pentanone	NA	25	U	5	U	33	U	5	U	12	U	5	U
Methylene Chloride	NA	5	U	1	U	7	U	1	U	2	U	1	U
Styrene	100	5	U	1	U	7	U	1	U	2	U	1	U
1,1,2,2-Tetrachloroethane	NA	5	U	1	U	7	U	1	U	2	U	1	U
Tetrachloroethene	5	79		1		130		1	U	110		0.3	J
Toluene	1000	5	U	1	U	7	U	1	U	2	U	1	U
1,1,1-Trichloroethane	200	23		0.3	J	35		1	U	38		1	U
1,1,2-Trichloroethane	5	5	U	1	U	7	U	1	U	2	U	1	U
Trichloroethene	5	32		0.8	J	53		1	U	59		1	U

Key:

- (a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
 (b) - These samples were collected from the influent water from the stripper.
 (c) - These samples were collected from the effluent water from the stripper.
 (d) - Secondary Maximum Contaminant Levels.
 U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL

B - This indicates that the reported value is less than the Contract Required

Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).

MCLs - Maximum Contaminant Levels, November 1994.

NA - Not Available

TABLE 3 (continued)
VOLATILE ORGANICS DATA FOR TREATMENT SYSTEM INFLUENT AND EFFLUENT AT THE GRANVILLE SOLVENTS SITE

Sample Number		N1-24-95 (b)		F1-24-95 (c)		N2-15-95 (b)		F2-15-95 (c)		N3-15-95 (b)		F3-15-95 (c)	
Date Sampled		1/24/95		1/24/95		2/15/95		2/15/95		3/15/95		3/15/95	
Units	MCLs	µg/l		µg/l		µg/l		µg/l		µg/l		µg/l	
Pumping Well (a)	µg/l	Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2		Extraction Well 1,2	
Parameter													
Vinyl Chloride	2	5	U	1	U	7	U	1	U	2	U	1	U
m & p Xylenes	10	5	U	1	U	7	U	1	U	2	U	1	U
o-Xylenes	10	5	U	1	U	7	U	1	U	2	U	1	U

Key:
(a) - The pumping well refers to the extraction wells from which the air stripper is drawing water.
(b) - These samples were collected from the influent water from the stripper.
(c) - These samples were collected from the effluent water from the stripper.
(d) - Secondary Maximum Contaminant Levels.
U - This indicates that the parameter was not detected.

Shading indicates exceedance of MCL or SMCL
B - This indicates that the reported value is less than the Contract Required Detection Limit (CRDL) but greater than the Instrument Detection Level (IDL).
MCLs - Maximum Contaminant Levels, November 1994.
NA - Not Available

have not been detected in past groundwater sampling events or in the treatment system influent and effluent (with the exception discussed above), there is no evidence that SVOC's have been released into the groundwater. Therefore, future groundwater monitoring for SVOC's is not warranted.

The treatment system influent and effluent water samples have also been analyzed for metals as listed on Table 3. Only two metals, iron and manganese, have consistently exceeded drinking water standards in the influent and effluent samples. Iron, which has ranged between 832 and 2,370 $\mu\text{g/l}$, has exceeded the Secondary Maximum Contaminant Level (SMCL) of 300 $\mu\text{g/l}$ in all samples. Manganese has shown concentrations between 63 and 82 $\mu\text{g/l}$ with all samples slightly exceeding the SMCL of 50 $\mu\text{g/l}$. It is quite common for iron and manganese to occur above the SMCL's naturally in groundwater and the concentrations measured for the influent and effluent likely represent background conditions that are unrelated to the release at the GSS. Furthermore, exceedance of the SMCL's is not a great concern as these standards are set for aesthetic considerations such as taste or staining of fixtures rather than possible health effects.

Thallium has been detected in four of the 14 influent and effluent samples (3.1 to 4 $\mu\text{g/l}$) with all detections slightly above the MCL of 2 $\mu\text{g/l}$. Lead was reported above the MCL of 15 $\mu\text{g/l}$ in only one sample (1/3/95) at 49.1 $\mu\text{g/l}$. Lead was only detected in three of the remaining 13 samples with all detections significantly below the MCL (maximum detection of 4.6 $\mu\text{g/l}$).

The results discussed above are the only instances of the influent and effluent samples exceeding applicable drinking water standards for metals. It is important to note that no noticeable change in metals concentrations occurred after pumping of the most highly impacted groundwater at GSS-EW2 began on January 3, 1995. Thus, there are no data that support the need to sample groundwater for these metals. However, effluent water samples will continue to be collected and analyzed for metals as required to meet the substantive requirements set forth by the Ohio EPA for NPDES discharge.

5.2 GROUNDWATER SAMPLING PROCEDURES

5.2.1 Decontamination

To reduce the possibility for cross contamination, dedicated pumps or bailers will be placed in the wells. All non-dedicated measuring, purging, and sampling equipment will be decontaminated prior to purging

and sample collection. Decontamination will include washing all development and sampling equipment with a non-phosphate laboratory detergent, potable water rinse, a methanol rinse as necessary (not used for pump decontamination), followed by a triple laboratory grade deionized water rinse.

5.2.2 Water Level Measurements

During all sampling events and hydraulic performance evaluations, groundwater elevations will be determined in all available wells and piezometers. If groundwater sampling will be performed, a complete circuit of water levels will be measured before purging and sampling. Water level measurements will be recorded beginning with the uncontaminated wells and ending with wells showing the highest constituent levels. Measurements will be made consecutively in a minimal amount of time. Groundwater levels will be measured with respect to surveyed reference points. The elevation of Raccoon Creek will be measured from the surveyed location on the Cherry Street Bridge. Water levels will be obtained using either an electrical water level tape and probe or a chalked, weighted surveyor's tape. The device will be rinsed with deionized water prior to each use.

5.2.3 Well Purging

The wells will be evacuated and sampled using dedicated pumps or bailers. Wells will be purged of a minimum of three (3) well volumes and sampled as soon as possible thereafter. Purging will continue until the pH, conductivity, and temperature have stabilized. The purged water will be contained in a graduated container to monitor volume removed. All purge water will be disposed in the treatment system holding tank.

5.2.4 Sample Collection

Samples will be obtained with dedicated pumps or bottom filling/discharging bailers. If a pump is used, the pumping rate will be reduced before sampling to provide a flow of approximately 100 mL per minute to minimize agitation. Samples will be collected by pumping directly into each of the required containers. If a bailer is used, the bailer will be slowly lowered and raised into the well to minimize agitation. The contents of the bailer will also be slowly poured into the sample bottles through a bottom discharging device. Sampling bottles will have been filled with the proper preservatives by the analytical laboratory.

Bottles will be filled completely, but will not be overflowed. The VOC bottles will be filled so that no headspace exists.

The samples for VOC analyses will be collected in 40 mL glass septum vials with Teflon-lined lids and preserved with hydrochloric acid. The maximum holding time for VOCs is 7 days.

A detailed field data sheet for each well will be completed during each sampling event. The field data sheet will document actual sampling and purging procedures and observations. The integrity of all monitor wells will be checked and noted during each sampling event.

5.2.5 Sample Handling

To prevent misidentification of samples, a label will be securely fixed to each sample container. These will be waterproof and carry the following information:

- Project name and number
- Sample identification and number
- Analytical parameter(s) and method
- Initials of collector
- Date and time of collection
- Preservatives used

The labels will be affixed to the appropriate sample containers at the laboratory, prior to shipment to the site, and completed in the field.

5.2.6 Sample Transportation

Following collection, samples will be transferred to an iced cooler. Ice packs will be used to maintain a constant temperature of four degrees Celsius within the cooler. To minimize the possibility of container breakage, void space within the cooler will be filled with suitable packaging material, such as "bubble wrap". At the end of each sampling day, samples will be hand delivered or transported to the laboratory via an overnight courier.

5.2.7 Chain-Of-Custody Procedures

A proper chain-of-custody program will be followed to document possession and handling of individual samples from the time of field collection through laboratory analysis. This program will include sample labels, chain-of-custody records, and laboratory logbook.

In the case where samples will leave the immediate control of the sample collector or custodian, such as shipment to the laboratory by the overnight courier, a seal will be provided on the shipping container to ensure that the samples have not been disturbed during transportation.

A chain-of-custody record will be filled out and accompany every sample. When a sample is shipped to the laboratory, the sample custodian or laboratory personnel will clearly document the processing steps that are applied to the sample. All sample preparation techniques and instrumental methods will be identified in a laboratory logbook.

5.2.8 Field and Laboratory QA/QC

Table 4 lists the number of QA/QC samples for the quarterly, semiannual, and annual sampling events. For each event, field duplicates will be collected from a randomly chosen well at a rate of 10% of the number of wells sampled. The field duplicates will be collected following the same procedures and will be analyzed for the same parameters as the other samples.

For each sampling event, atmospheric (field-bias) blanks will be collected at a rate of 10% of the investigative samples. The atmospheric blanks will be collected by filling a set of sample containers with Type II reagent-grade water. The field-bias blanks will be analyzed for the same water quality parameters as the other samples.

At least one trip blank per sampling event will be analyzed. The trip blank will be filled with distilled water at the laboratory before going into the field and will be carried along with the other sample sets. The trip blank sample will be analyzed for the same parameters as the other samples. The results of the analyses of the blanks will not be used to correct the groundwater data. If contaminants are found in the blanks, an attempt will be made to determine the source of the contaminants.

TABLE 4
QA/QC SAMPLES FOR GROUNDWATER SAMPLING EVENTS

Quarterly Monitoring Well Samples	Field Duplicates	Field Blanks	Trip Blanks	Matrix Spikes	Matrix Spike Duplicates	Total Number of Samples
6	1	1	1	1	1	11
Semi-Annually Monitoring Well Samples	Field Duplicates	Field Blanks	Trip Blanks	Matrix Spikes	Matrix Spike Duplicates	Total Number of Samples
12	1	1	1	1	1	17
Annually Monitoring Well Samples	Field Duplicates	Field Blanks	Trip Blanks	Matrix Spikes	Matrix Spike Duplicates	Total Number of Samples
22	2	2	2	2	2	32

The laboratory QA/QC will provide for the use of standards, laboratory blanks, duplicates, and spiked samples for calibration and identification of potential matrix interferences. The laboratory will use adequate statistical procedures (QC charts) to monitor and document performance and implement an effective program to resolve testing problems (instrument maintenance, operator training). Data from QC samples (blanks, spiked samples) will be used as a measure of performance or as an indicator of potential sources of cross-contamination, but will not be used to alter or correct analytical data.

6.0 TREATMENT SYSTEM PERFORMANCE SAMPLING AND ANALYSIS

Weekly sampling of the air stripper influent and effluent began with the system start-up on December 20, 1994 and has continued through January 24, 1995. Sampling is now conducted on a monthly schedule. Monthly sampling of the influent and effluent will continue during the treatability study. Following the treatability study, monthly samples will be collected for VOCs by U.S. EPA Method 524.2.

Influent and effluent samples will be collected from sampling valve ports in the discharge line within the treatment building. The influent port used to sample the untreated groundwater is located on the downstream side of the bag filter located between the 2500 gallon surge tank and the air stripper. The effluent port used to sample the groundwater after treatment is located on the back side of the air stripper on the east side of the blower.

Sampling of the influent and effluent will take place when the transfer pump from the holding tank to the stripper is operating and has been operating for at least 5 minutes. During this 5 minute period, the influent and effluent sampling ports will be opened to allow flushing at a slow rate (approximately 0.5 gallon per minute). The flushed water will be collected and recirculated into the holding tank for treatment after sampling is complete. After flushing, the port valves will be adjusted to reduce the flow rate to 100 mL/minute. The influent sample will be collected first followed by the effluent sample.

The analytical results from the effluent sample will be used as the discharge values for the outfall.

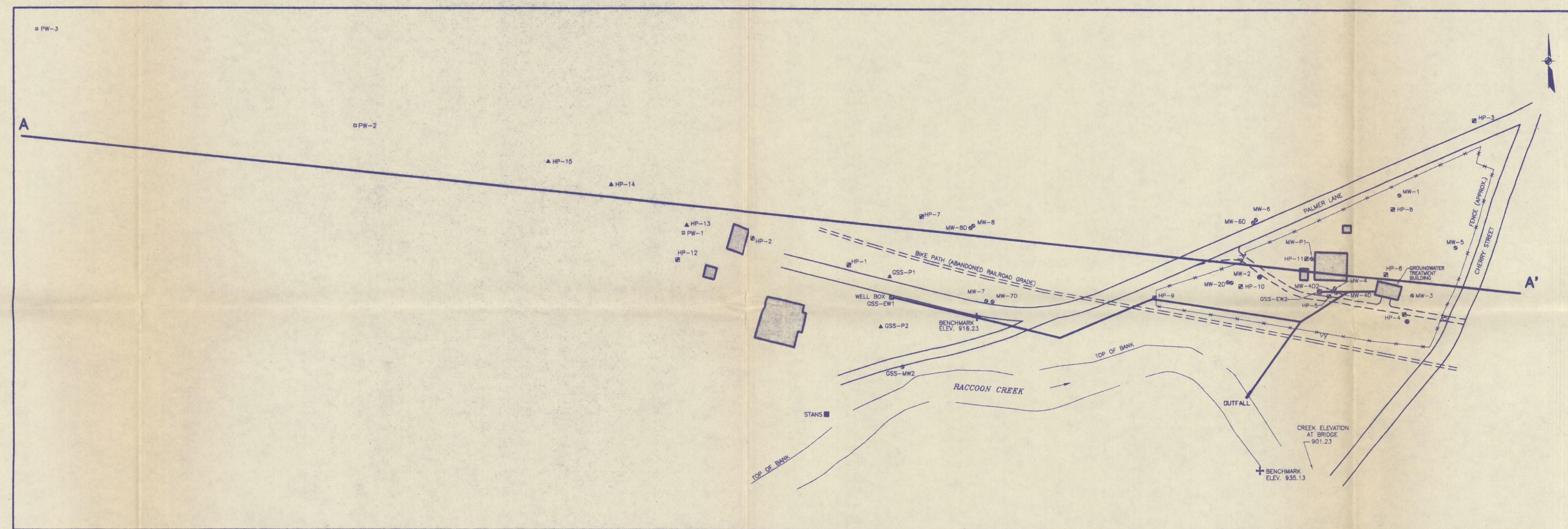
7.0 SCHEDULE AND REPORTING

The new monitor wells and piezometers will be installed within 12 weeks following EPA approval of this plan. The first sampling event will be completed within 6 weeks of completion of well installation.

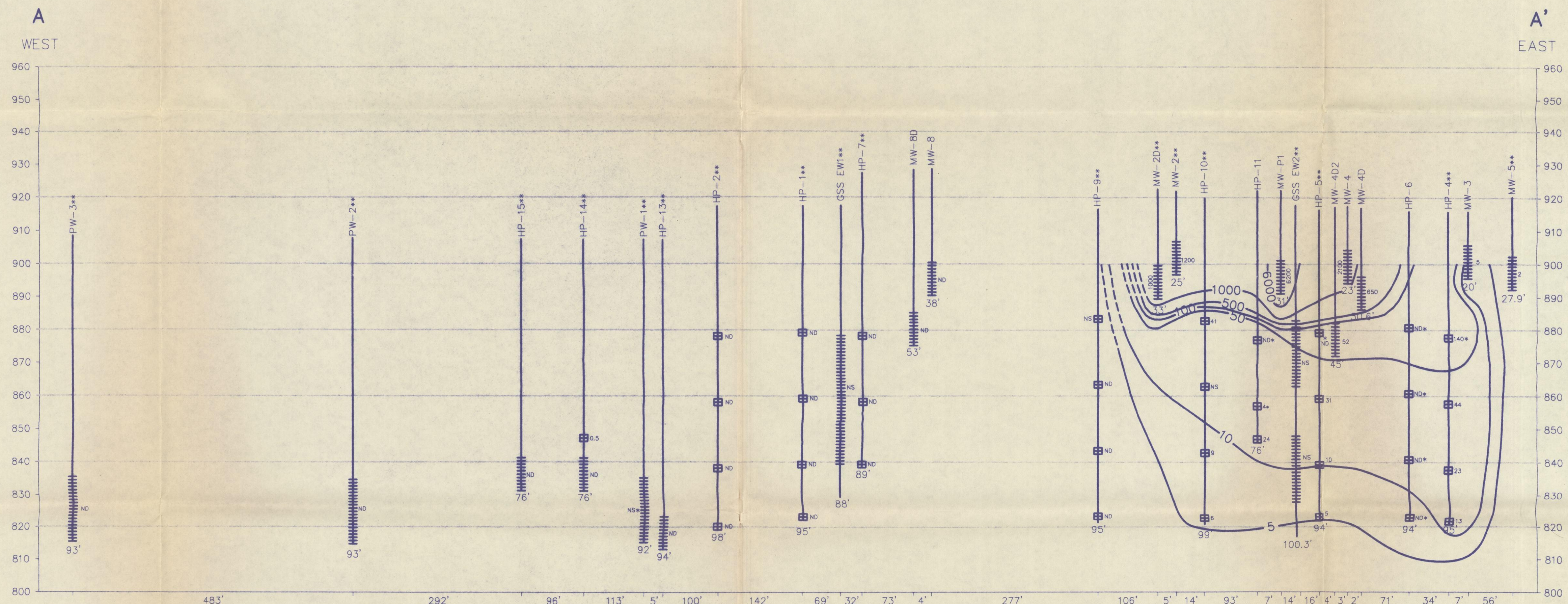
A report describing the well installation and containing the results of the first sampling event will be submitted within 8 weeks of completion of the first sampling event. The report will detail the design, drilling, testing, and installation of the new wells and piezometers. Data from the first sampling event will be provided and discussed in terms of plume definition.

Quarterly reports will be submitted to provide continued documentation of the extraction system in meeting the performance standard of the AOC. The quarterly reports will contain potentiometric maps that will be used to evaluate the hydraulic effectiveness of the pumping system. Any changes in pumping rates or operation of the treatment system will be noted. The quarterly reports will contain a tabulated summary of the latest available groundwater quality data and note any changes in plume definition. Data from sampling of the air stripper influent and effluent will also be included. The effluent data will be compared to applicable discharge limits for Raccoon Creek. The first quarterly report will be submitted within 12 weeks of the submittal of the well installation report.

Annual reports will contain a summary of the quarterly evaluations and operation of the system over the previous year. If the performance standards are not being met, the system will be re-evaluated and corrective action will be recommended.



BASE MAP
SCALE: 1" = 100'



DEPTH PROFILE

HORIZONTAL SCALE: APPROX. 1"=100'
VERTICAL SCALE: 1"=20'

WELL LOCATIONS ADJUSTED FOR ILLUSTRATION PURPOSES

D	6/12/95	TPF/CAP	TS	ORIGINAL
NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION
REVISIONS				

DRAWN BY	TPF
DEPT. CHECK	
PROJ. CHECK	

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COLUMBUS, OHIO 43231
PHONE: (614) 890-5501

SCALE: AS NOTED ABOVE

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GRANVILLE SOLVENTS SITE

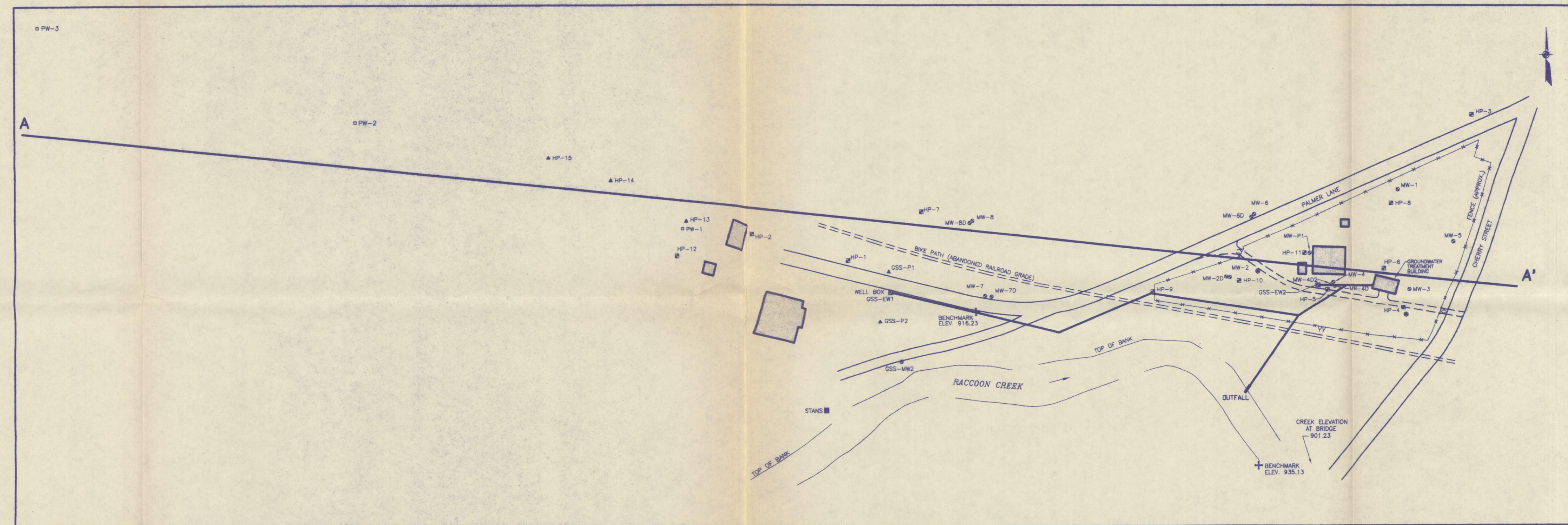
DEPTH PROFILE OF TCE CONCENTRATIONS ALONG CROSS SECTION LINE A - A'

GRANVILLE, OHIO

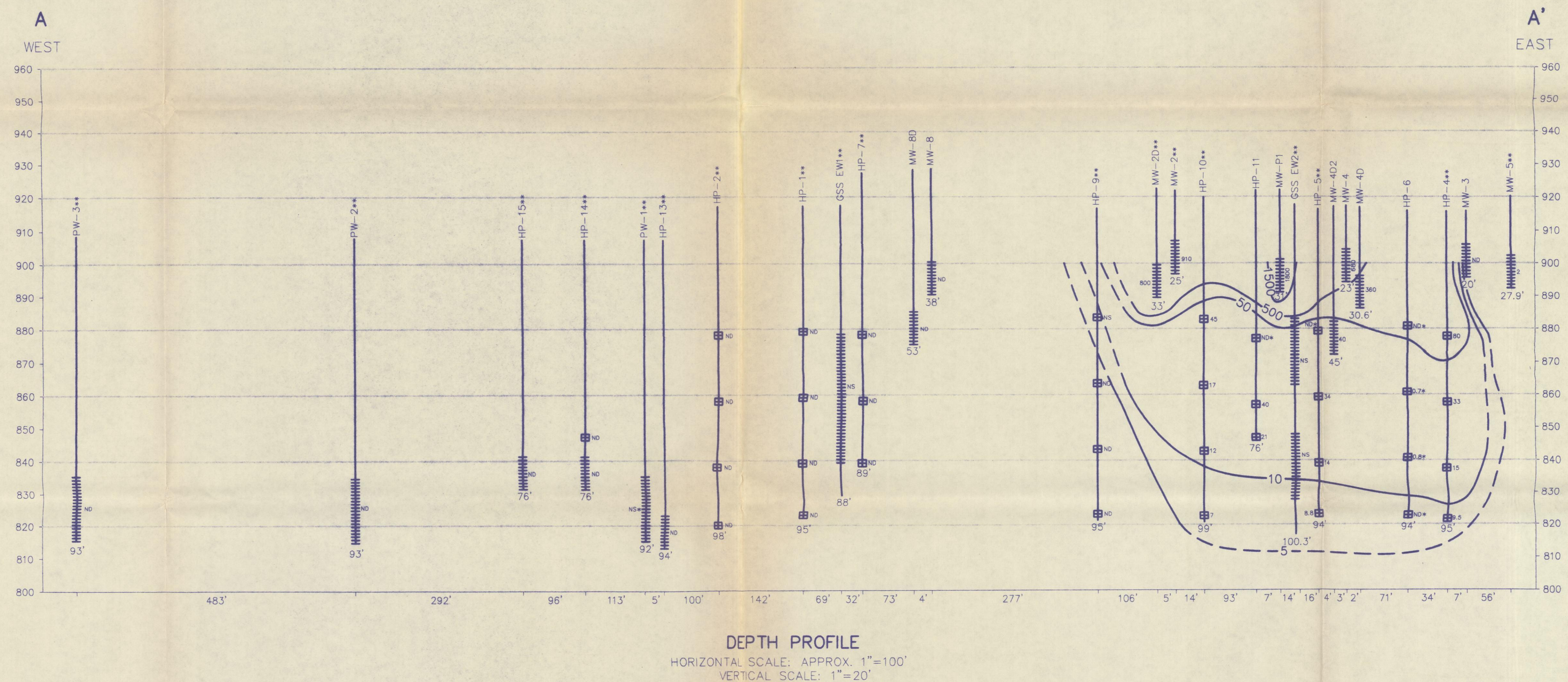
JOB 016688-0011-011

FILE NO. WSELEV13

FIGURE 4



BASE MAP
SCALE: 1" = 100'



WELL LOCATIONS ADJUSTED FOR ILLUSTRATION PURPOSES

D	6/12/95	TPF/CAP	TS	ORIGINAL
NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION
REVISIONS				

DRAWN BY	TPF
DEPT. CHECK	
PROJ. CHECK	

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SCALE: AS NOTED ABOVE

GRANVILLE SOLVENTS SITE

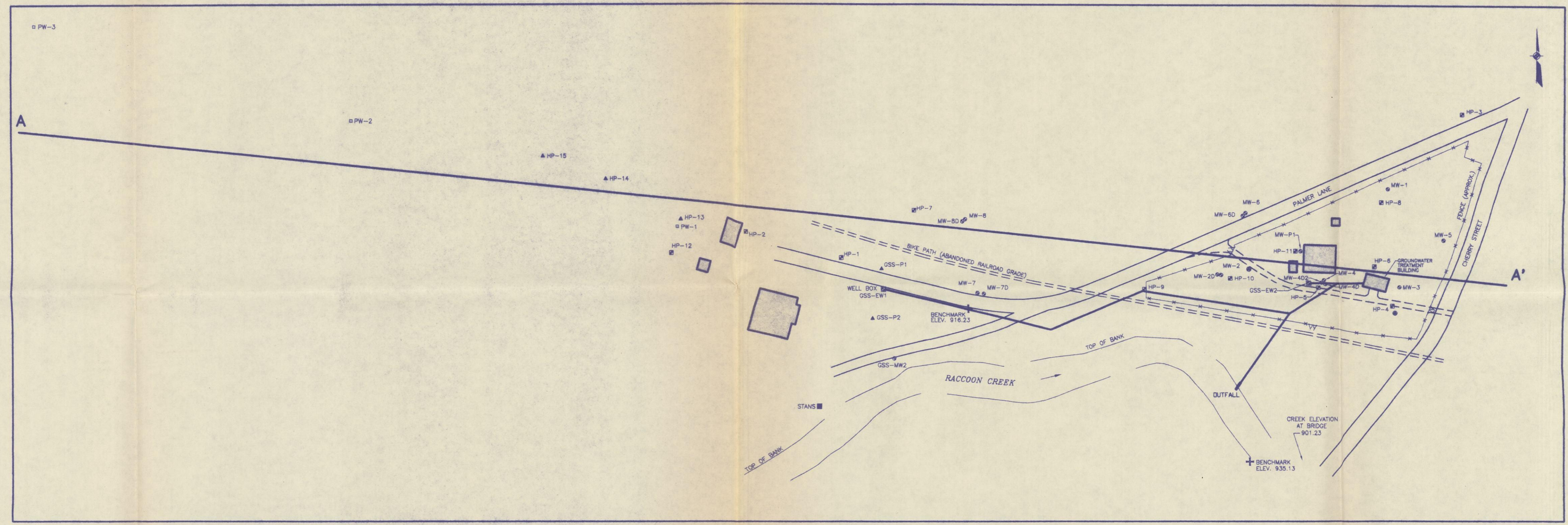
DEPTH PROFILE OF 1,1,1-TCA CONCENTRATIONS
ALONG CROSS SECTION LINE A - A'

GRANVILLE, OHIO

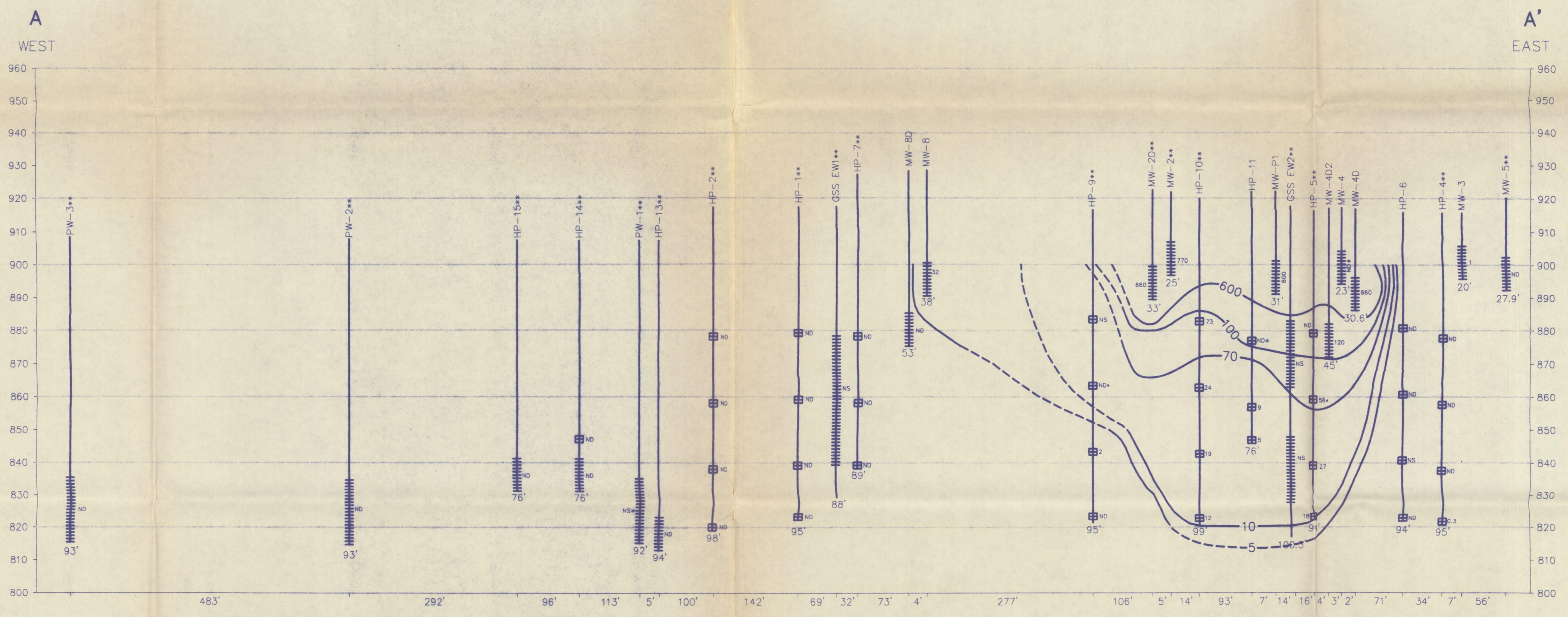
JOB 016688-0011-011

FILE NO. WSELEV14

FIGURE 5



BASE MAP
SCALE: 1" = 100'



DEPTH PROFILE

HORIZONTAL SCALE: APPROX. 1"=100'
VERTICAL SCALE: 1"=20'

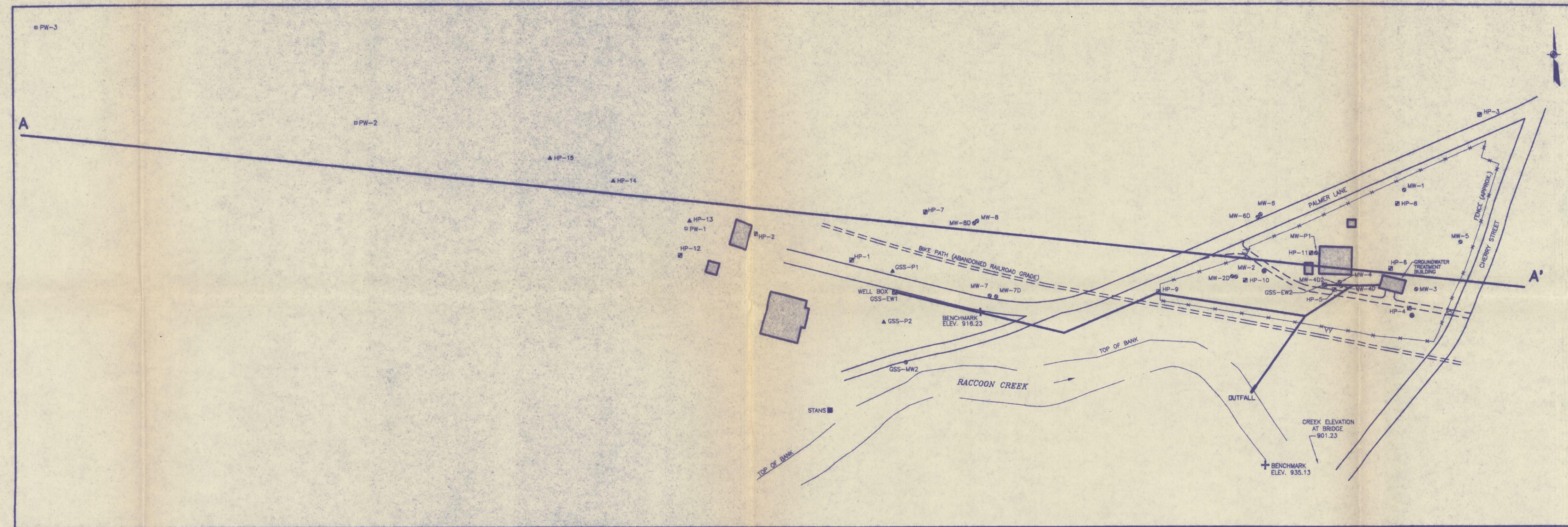
WELL LOCATIONS ADJUSTED FOR ILLUSTRATION PURPOSES

EXPLANATION

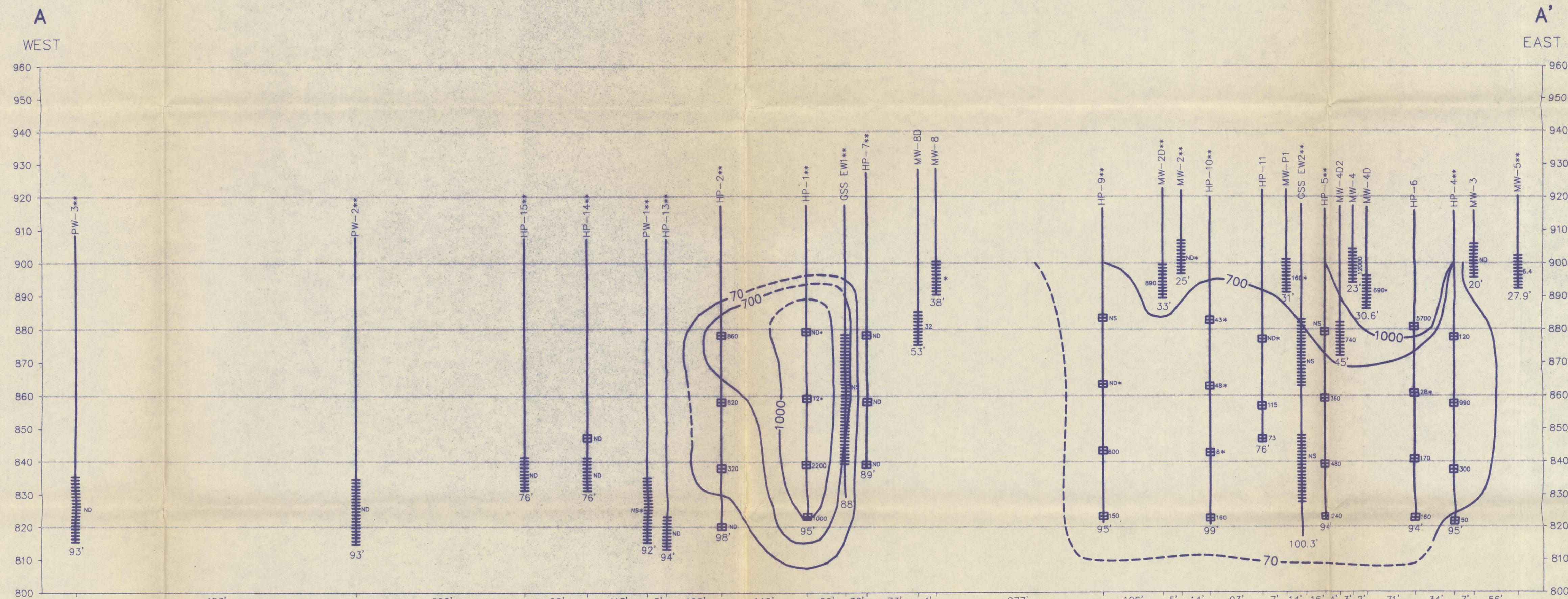
- DEPTH WHERE WATER SAMPLE COLLECTED
- WELL SCREEN LENGTH
- TOTAL DEPTH OF WELL OR BOREHOLE BELOW GROUND SURFACE
- ND NON DETECT
- NS NOT SAMPLED AT THAT DEPTH
- ppb PARTS PER BILLION
- * POINT NOT USED IN DEPTH PROFILE
- ** WELLS PROJECTED IN TO THE CROSS SECTION

ISO CONCENTRATION LINES
DASHED WHERE INFERRED
NOTE: CONTOUR INTERVALS FOR ILLUSTRATION PURPOSES.

0 6/12/95 TPF/CAP TS ORIGINAL	DRAWN BY TPF DEPT. CHECK PROJ. CHECK	M&E Metcalf & Eddy 2800 CORPORATE EXCHANGE DR., SUITE 250 COLUMBUS, OHIO 43231 PHONE: (614) 890-5501	SCALE: AS NOTED ABOVE UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION	GRANVILLE SOLVENTS SITE DEPTH PROFILE OF Cis-1,2-DCE CONCENTRATIONS ALONG CROSS SECTION LINE A - A' GRANVILLE, OHIO	JOB 016688-0011-011 FILE NO. WSELEV15 FIGURE 6										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NUMBER</th> <th>DATE</th> <th>MADE BY</th> <th>CHECKED BY</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;">REVISIONS</td> </tr> </tbody> </table>		NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION	REVISIONS								
NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION											
REVISIONS															



BASE MAP
SCALE: 1" = 100'



DEPTH PROFILE

HORIZONTAL SCALE: APPROX. 1"=100'
VERTICAL SCALE: 1"=20'

WELL LOCATIONS ADJUSTED FOR ILLUSTRATION PURPOSES

EXPLANATION

- DEPTH WHERE WATER SAMPLE COLLECTED
- WELL SCREEN LENGTH
- TOTAL DEPTH OF WELL OR BOREHOLE BELOW GROUND SURFACE
- ND NON DETECT
- NS NOT SAMPLED AT THAT DEPTH
- ppb PARTS PER BILLION
- * POINT NOT USED IN DEPTH PROFILE
- ** WELLS PROJECTED IN TO THE CROSS SECTION

ISO CONCENTRATION LINES
DASHED WHERE INFERRED

NOTE: CONTOUR INTERVALS FOR ILLUSTRATION PURPOSES.

0	6/12/95	TPF/CAP	TS	ORIGINAL
NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION

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GRANVILLE SOLVENTS SITE

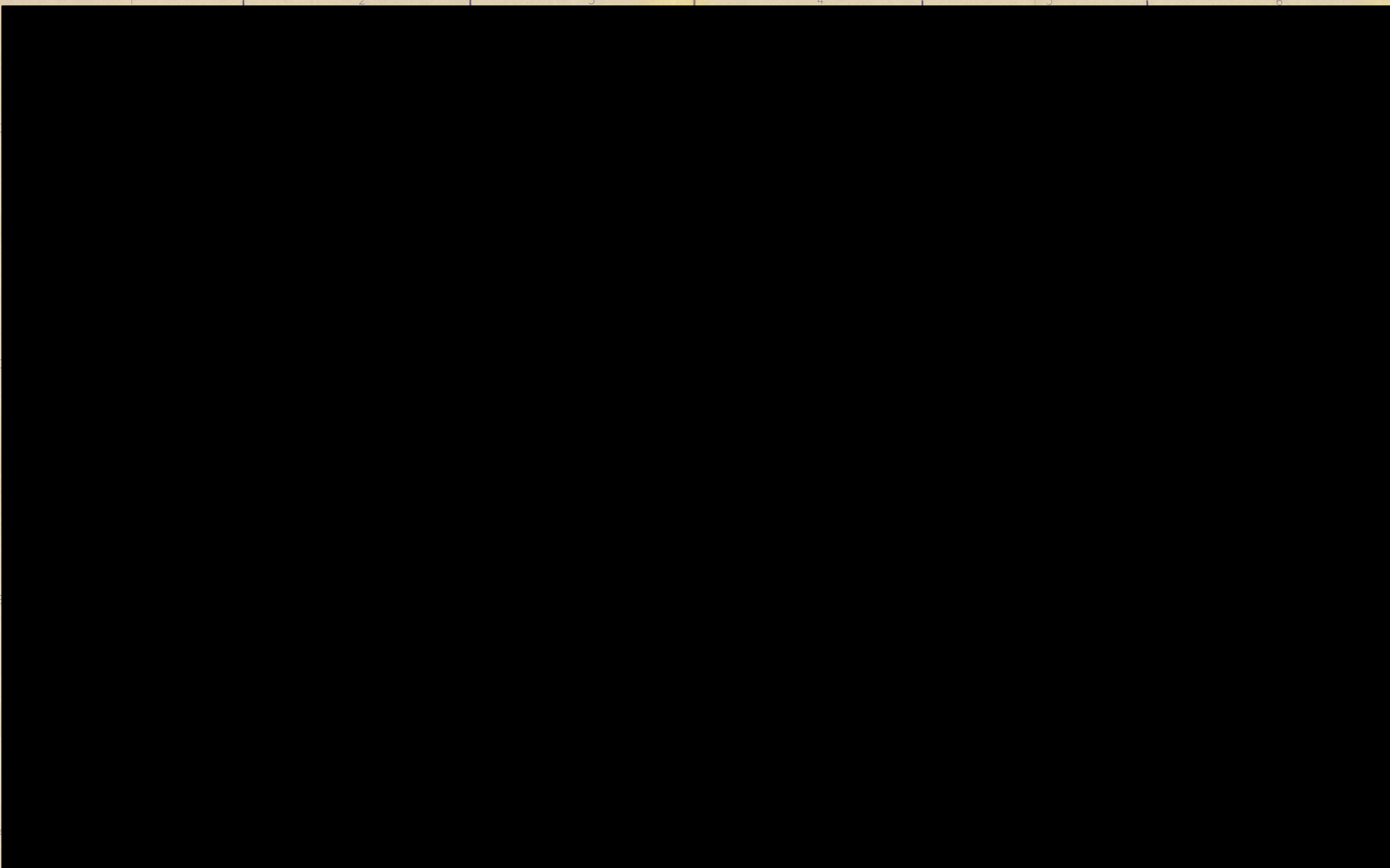
DEPTH PROFILE OF ACETONE CONCENTRATIONS
ALONG CROSS SECTION LINE A - A'

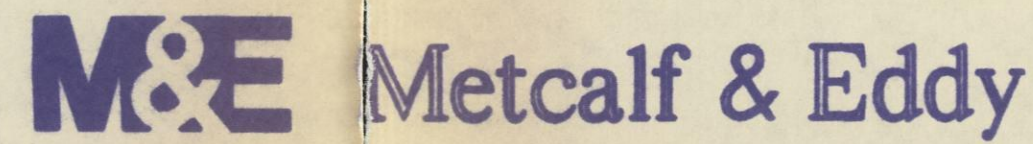
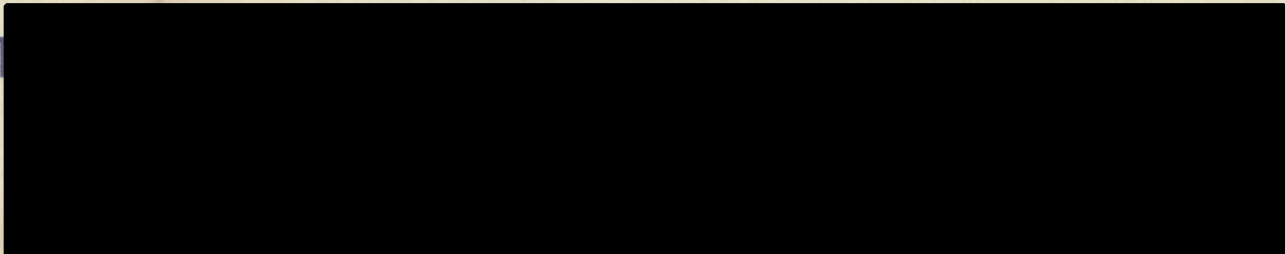
GRANVILLE, OHIO

JOB 016688-0011-011

FILE NO. WSELEV17

FIGURE 8



					DRAWN BY CAP		SCALE: 1" = 80' SCALE IN FEET 0 40 80	GRANVILLE SOLVENTS SITE 	JOB 016688
					DEPT. CHECK JMM				FILE NO. GRNVOC6
					PROJ. CHECK				PLATE 1
NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION	REVISIONS		REG. PROF. ENGR.	DATE	UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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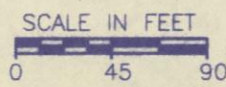
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NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTION
REVISIONS				

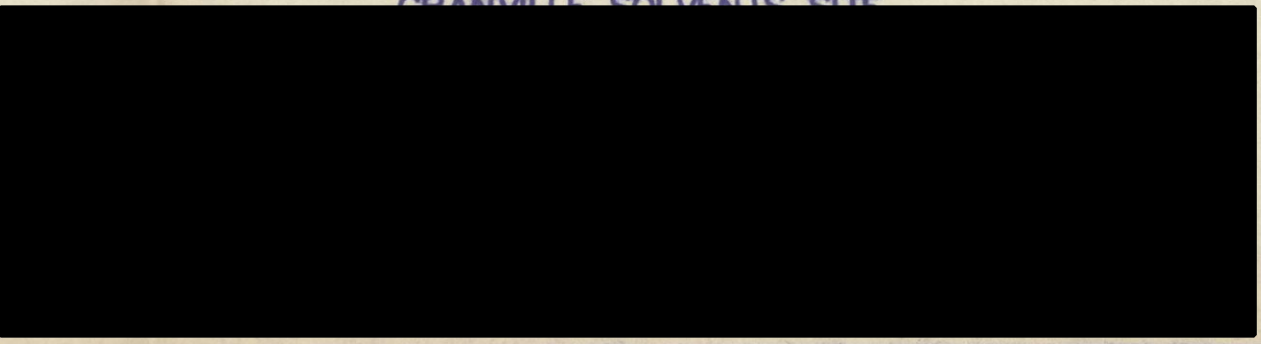
DRAWN BY	CAP
DEPT. CHECK	
PROJ. CHECK	

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SCALE: 1" = 90'



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FILE NO. GRV-ISO7
PLATE 2

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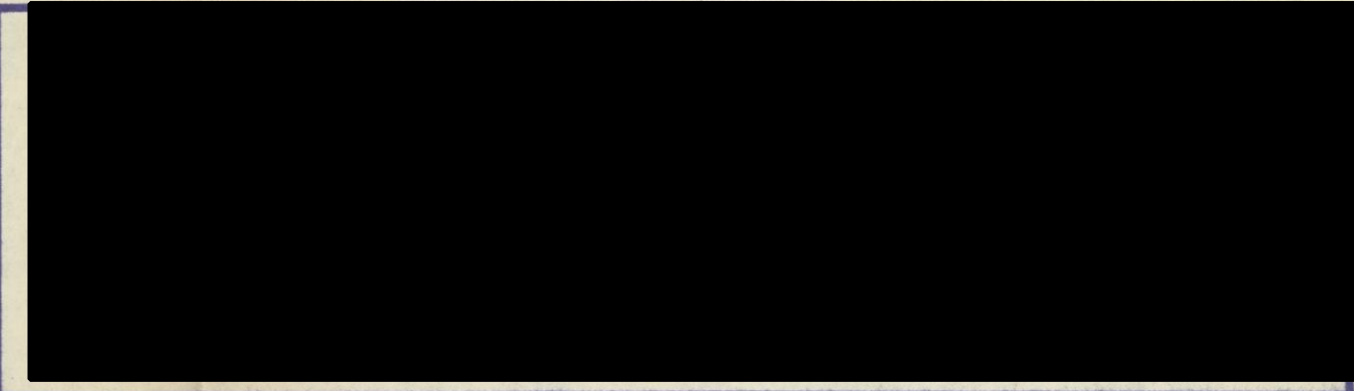
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M&E Metcalf & Eddy
2800 CORPORATE EXCHANGE DR., SUITE 250
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FILE NO.	GRV-ISO6
PLATE	3

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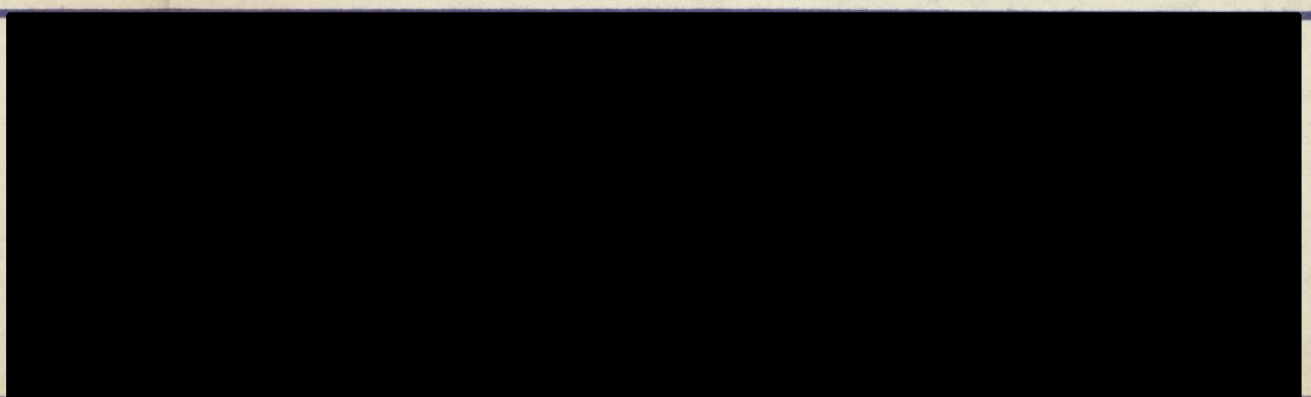
M&E Metcalf & Eddy
2800 CORPORATE EXCHANGE DR., SUITE 250
COLUMBUS, OHIO 43211
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JOB	016688
FILE NO.	GRV-ISO8
PLATE	5

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JOB	016688
FILE NO.	GRV-ISO9
PLATE	6

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JOB	016688
FILE NO.	GRV-JS05
PLATE	7

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Contents

**RESPONSE TO COMMENTS
FROM UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGARDING GRANVILLE SOLVENTS SITE
REVISED GROUNDWATER MONITORING PLAN
DATED APRIL 11, 1995**

Responses to Comments from Mr. Edward Hanlon:

General Response:

In addition to the comments by Mr. Edward Hanlon, the accompanying memoranda from Mr. Steven Acree and Dr. Luanne Vanderpool of the U.S. EPA and the memorandum from the Ohio EPA regarding the Groundwater Monitoring Program Plan (Plan, April 11, 1995) have been considered in these responses. Both the U.S. EPA reviewers and the Ohio EPA agree that the proposed groundwater water monitoring network set forth in this plan is adequate to further define the extent of lateral contamination and the performance of the current pump and treat system. Concerns raised in these memoranda focus on better definition of the vertical distribution of impacted groundwater. To aid in the review of these responses, detailed maps are added to the Plan to illustrate the observed distribution of specific chlorinated organic species and acetone. Each of six plates (Plates 2, 3, 4, 5, 6, and 7) include five maps, each map showing the concentration of a specific species [tetrachloroethene (PCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), cis-1,2-dichloroethane (cis-1,2-DCA), 1,1-dichloroethane (1,1-DCA), and acetone] at specific depths within the aquifer. Accompanying these six plates are six figures (Figures 3, 4, 5, 6, 7, and 8) illustrating cross-sectional views of the distribution of each compound. All illustrations are based on data provided in the Work Plan for the Removal Action (October 19, 1994; revised November 18, 1994; revised January 31, 1995; and revised May 19, 1995), the Operational Plan (December 1, 1994), and the Aquifer Pumping Test Report (January 31, 1995).

Revisions to the Work Plan for the Removal Action, and the Responses to Comments document regarding the March 14, 1995, EPA Comment Document were made and submitted to the U.S. EPA on May 19, 1995. Prior to that submission, a revised Groundwater Monitoring Program Plan was submitted (April 11, 1995) for review based on a meeting with the U.S. EPA and Ohio EPA on March 20, 1995, regarding the comments provided March 14, 1995. Following the March 20 meeting, the Aquifer Pumping Test Report (January 31, 1995) was supplemented by

additional requested material on March 27, 1995. The Aquifer Pumping Test Report is amended by reference to these materials.

Specific Responses:

- 1. The GSSPRPs propose to monitor merely for VOCs and acetone. However, as indicated in earlier comments by EPA, the scope of the AOC is not limited to merely VOC and acetone contamination. Contamination at the site may not only include VOCs and acetone, but also metals and semi-VOCs. Accordingly, the GSSPRPs must incorporate into the Monitoring Plan a requirement that monitoring for metals and semi-VOCs be conducted on a quarterly basis for at least 1-year and thereafter unless and until the GSSPRPs develop sufficient data (which is not yet available) to justify that these parameters do not pose an actionable threat and need not be monitored any further. This is necessary for the protection of the residents of Granville, and required by the AOC.**

Response:

The GSS PRP Group takes exception to the insistence that "Contamination at the site may not only include VOCs and acetone, but also metals and semi-VOCs." The Administrative Order on Consent (AOC) Section III.5 - Findings of Facts clearly states that "Sampling and analysis conducted at the Site indicated that substances listed on Attachment B, at the levels indicated therein, have been detected in the surface soils and groundwater at the Site." Attachment B includes only volatile organic compounds, of which acetone is one, and does not include semivolatile organic compounds (SVOCs) nor metals. The suggestion that the GSS PRP Group include these substances in further investigation is not justified by the data.

On January 30, 1991, and again on March 26, 1991, groundwater samples collected by the Ohio EPA were analyzed for SVOCs at monitoring well locations including MW-4 and MW-2. These sampling locations are among those that have indicated the highest concentrations of VOCs in the groundwater. Yet, the U.S. EPA stated in the Screening Site Inspection Site Evaluation of November 29, 1993, "No positively identified SVOCs were detected in any of the samples..." and indicated that only a few tentatively identified compounds might be inferred. Given the high concentration of VOCs in groundwater samples from MW-2 and MW-4, it would be expected, if SVOCs had been released into the aquifer, that they would have been detected at those same monitoring well locations. The lack of any detection of SVOCs in these wells and other wells supports the conclusion that SVOCs have not been released into the groundwater at the Site.

If any SVOCs were released into the environment at the Site, they must occur only in the Source Area Soils. There is little evidence of SVOCs in the aquifer. The PRP Group could, during characterization of the soils, do random sampling and analysis for SVOCs to eliminate any need for further consideration of SVOCs at the Site. Based on the results of the analyses, if SVOCs are detected, then the need for remediation of SVOCs in the Source Area Soils could be considered.

Since operation of the groundwater extraction and treatment system began, the PRP Group has maintained hydraulic control of the groundwater at the Site and between the Site and the Village wellfield. Sampling of the system's influent has indicated the possible presence of one SVOC - bis(2-ethylhexyl)phthalate - with concentrations ranging from 0.9 to 45 $\mu\text{g/l}$. Most of these detections have been estimated at or below 10 $\mu\text{g/l}$ and are routinely detected in the laboratory blanks at similar concentrations. As reported in the January 31, 1995, Aquifer Pumping Test Report submitted to the EPA, bis(2-ethylhexyl)phthalate, if it were present, could be attributed to the plastics used to construct the treatment system piping and it is unlikely that this compound exists in the groundwater. This is further supported by the routine detection of this compound in the laboratory blanks. No other SVOCs have been detected in seven sampling events to date.

Because SVOCs have not been detected in the groundwater sampling events or the treatment system influent and effluent (with the exception discussed above), there is no indication that SVOCs have been released into the groundwater and there is no technical justification for requiring the monitoring of SVOCs. The PRP Group will continue, however, to monitoring the influent and effluent for SVOCs. If there are any significant detections of SVOCs at any time, groundwater monitoring at the Site for SVOCs will be evaluated and could be discussed with the U.S. and Ohio EPAs.

As part of the waste characterization for disposal of soils stockpiled in roll-off containers at the Site, chemical analysis was conducted of the soils and reported for Base/Neutral Acids (SW846 8270A) and TCLP Semivolatile Organics (SW846 8270A). These results were provided to the U.S. EPA on June 1, 1995, requesting approval for disposal of these soils. The results indicate that there were no SVOCs detected in these soils that were stockpiled in four roll-off containers during the site construction activities in areas that are suspected of being impacted by past activities.

Treatment system influent and effluent water samples have been collected since the start of operation on December 20, 1994. As stated in the Groundwater Monitoring Program Plan submitted on January 31, and April 12, 1995, only iron and manganese have been consistently greater than drinking water standards in the influent and effluent samples. These metals exceed only the Secondary Maximum Contaminant Levels, or SMCL, which are used only when evaluating aesthetics such as taste and/or staining of fixtures rather than health effects. Thallium and lead were also detected only in the influent and effluent water samples collected from the treatment system. Thallium exceeded the MCL in four out of fourteen samples whereas lead exceeded the U.S. EPA's Treatment Technique Action Level for Tap Water in only one sampling (January 3, 1995). Since that sample, lead has not been detected at concentrations above the action level.

Also, no changes have occurred in metal concentrations since the start of pumping of the most highly impacted groundwater from GSS-EW2 on January 3, 1995. If metals had been released to the groundwater from the Site, they would be expected to occur at their highest concentrations at the source area where extraction well GSS-EW2 was installed. At the time of the system start up, water was initially pumped and the influent sampled from GSS-EW1 located near the leading edge of the plume. On January 3, 1995, GSS-EW2 was added to the system. A comparison of the influent metals concentrations after GSS-EW2 pumping began showed no appreciable change from earlier data with only GSS-EW1 pumping. Similarly, no appreciable change in metals concentrations occurred when the pumping rate for GSS-EW1 was later reduced. If metals had been released to the groundwater, one would expect appreciable changes in the influent concentrations when pumping of GSS-EW2 began, and also when the pumping rate of GSS-EW1 was reduced. These did not occur.

As part of the waste characterization for disposal of soils stockpiled in roll-off containers at the Site, chemical analysis was conducted of the soils and reported for TCLP Metals (SW846 1311/6010A/7470 for mercury). These results were provided to the U.S. EPA on June 1, 1995, requesting approval for disposal of these soils. The results indicate that copper was detected at a maximum concentration of 0.27 mg/l, zinc was detected at a maximum concentration of 0.94 mg/l, and barium at a maximum concentration of 1.8 mg/l in these soils that were stockpiled in four roll-off containers during the site construction activities in areas that are suspected of being impacted by past activities.

Based on the data, there is no evidence to support the need for including metals as part of groundwater sampling at the Site. To address concerns expressed in these comments, the PRP Group could, during characterization of the soils, do random sampling and analysis for SVOCs and metals. Based on the results of the analysis, if SVOCs and metals are detected, then the need for consideration of SVOCs and metals could be discussed.

Influent and effluent water samples will continue to be collected and analyzed for metals as necessary to meet the substantive requirements set forth by the Ohio EPA Policy 0100.027 for water discharged to Raccoon Creek.

Dr. Vanderpool suggested a single round of groundwater sampling for semi-VOCs (Comment #2) and presumably for metals. This is in contrast to the suggested quarterly sampling. The testing for these constituents is not justified, and to suggest that "This is necessary for the protection of the residents of Granville, and required by the AOC." is inaccurate and without basis.

2. As further discussed in the attached memoranda prepared by Luanne Vanderpool and Steve Acree, modifications to the proposed field efforts must include the following:

- a) as noted on the enclosed figure, add a two-well cluster location along the eastern boundary;
- b) as noted on the enclosed figure, move the proposed GSS-MW3 location to a location approximately 50 feet due north of the proposed location;
- c) as noted on the enclosed figure, install two deep wells along side of MW-1 and MW-2D which are located in the immediate vicinity of the Site;
- d) during installation of the wells at the proposed locations, take discrete ground-water samples at 10-foot intervals using a tool such as a hydropunch, and screen soil samples in a. If higher VOC concentrations exist in areas below the water surface, a well must be screened in the zone indicating the highest VOC concentrations, and an additional well installed in the same location which is screened along the water table surface;

- e) after installation of these wells (and development/equilibrium occurs), sample all of the wells at the site for all VOC's metals, semi-VOC's, and acetone, on a quarterly basis for at least one year, After one year of sampling and, monitoring frequency and/or parameters may be modified if sufficient data is generated indicated that such action is appropriate; and
- f) during installation of wells at proposed locations near where contaminants were known to be released, screen soil samples for NAPL.

Response:

- 2. a) As discussed in response to Dr. Vanderpool's Comment #1, it is proposed to keep the existing locations and to add a deep well at the location proposed for GSS-MW3.
- b) As stated in "a." above, the original proposed locations will be maintained.
- c) A deep well has been proposed for the location of MW-2D. However, based on the discussion provided in response to Dr. Vanderpool's Comment # 1, a deep well is not warranted at the northeast boundary of the site based on previous water sampling using a Hydropunch sampling device.
- d) As further discussed in response to Mr. Acree's Comment #4 and Dr. Vanderpool's Comment #1, the locations for the proposed monitoring locations are based on previous sampling with a Hydropunch sampling device. The results of that sampling are presented in the attached Plates 2 through 7 and Figures 3 through 8. No additional value would be gained from extensive sampling at these previous Hydropunch® locations.
- e) As further discussed in response to Comment # 1(above) and Dr. Vanderpool's Comment #1, sampling and analyses for SVOC's and metals have no technical merit. The sampling frequency, as discussed further in response to Mr. Acree's Comment #5, will be based on results of analyses following installation of the wells and may be re-considered at that time. Wells that are intended to document the performance of the containment system obviously are planned to be sampled more frequently than those wells that are intended

to verify the extent of the plume. No purpose would be served by increasing the frequency of sampling.

- f) As further discussed in response to Mr. Acree's Comment #2, the suggestion to screen for nonaqueous phase liquid in the soil in the vicinity of the suspected source of contamination will be considered for incorporation in the Source Area Soil Design Investigation which is tentatively scheduled for July 1995. During the installation of GSS-MW-13, visual methods will be used to carefully screen for nonaqueous phase liquid.

Response to Comments from Mr. Steven D. Acree:

General Response:

The GSS PRP Group agrees with Mr. Acree's statement that the monitoring well locations are sufficient to adequately define the lateral extent of contamination and evaluate the effectiveness of groundwater containment. It is also agreed that additional work may be necessary following the review of data obtained from this effort. To aid in the discussion of concerns raised regarding the vertical extent of contamination, detailed maps were constructed illustrating the distribution of specific chlorinated organic species and acetone. Six plates (Plates 2, 3, 4, 5, 6, and 7) were developed which include five maps on each plate showing the concentration of a specific species [tetrachloroethene (PCE), trichloroethene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), cis-1,2-dichloroethane (cis-1,2-DCA), 1,1-dichloroethane (1,1-DCA), and acetone] at specific depths within the aquifer. Along with these six plates, are six figures (Figures 3, 4, 5, 6, 7, and 8) illustrating a cross-sectional view of the distribution of each compound. All illustrations are based on data provided in the Work Plan for the Removal Action (October 19, 1994; revised November 18, 1994; revised January 31, 1995; and revised May 19, 1995), the Operational Plan (December 1, 1994), and the Aquifer Pumping Test Report (January 31, 1995).

Specific Responses:

1. Section 2.1, P. 2

Currently, all proposed monitoring wells between water-supply well PW-1 and extraction well EW-1 are screened immediately below the water table. Extraction well EW-1 and the water supply wells are screened significantly below the water table. Additional monitoring the interval screened by these wells appears to be warranted to provide water quality and potentiometric information.

Response:

1. Based on Plates 1 through 7 and Figures 2 through 8, west of the GSS the groundwater impacted with the highest concentration appears to be constrained within the first twenty feet of the aquifer (HP-10, MW-2, MW-2D, HP-9, MW-8, MW-8D, HP-7, and HP-1). It is apparent that well

screens set in the more shallow parts of the aquifer will yield the earliest detection of these compounds if present. Hydraulic information deep in the aquifer may be obtained from the existing piezometers GSS-P1, GSS-P2, and piezometers that were converted during the Hydropunch investigation, HP-12, HP-13, HP-14, and HP-15.

At this time, no modifications to the proposed monitoring well network between GSS-EW1 and PW-1 will be made. If, after installation of the proposed groundwater monitoring wells, it becomes necessary to conduct additional work to measure and verify the performance standards established in the AOC and Work Plan, that work will be proposed.

2. Section 2.1, p. 6

It is noted that well GSS-MW13 is proposed to be located near areas where contaminants were released. It is recommended that soil samples collected during well installation be screened for indications of nonaqueous phase liquids (NAPL). Field screening methods such as monitoring using an organic vapor analyzer and soil/water separation tests enhanced with hydrophobic dye have been used as indicators of NAPL in soil samples. This information may be useful in refining the conceptual model for contaminant nature, transport, and distribution at the site.

Response:

2. The suggestion to screen for nonaqueous phase liquid (NAPL) in the soil in the vicinity of the suspected source of contamination is acknowledged and will be considered for incorporation in the Source Area Soil Design Investigation tentatively scheduled for July 1995. During the installation of GSS-MW-13, visual methods will be used carefully to screen for nonaqueous phase liquid.

3. Section 2.2, p. 8.

Routine analyses of ground-water samples from monitoring wells MW-6D and MW-8D are not proposed. It is recommended that these wells be sampled on an annual basis to aid in detecting downward contaminant migration.

Response:

3. Monitoring wells MW-6D and MW-8D were not proposed to be monitored because the sampling of adjacent monitoring wells MW-6 and MW-8 provides data more representative of the highest concentrations in the aquifer at those locations. Sampling of MW-6D and MW-8D will yield little additional information. However, monitoring wells MW-6D and MW-8D will be sampled during the first annual sampling event only and will then be used only for the measurement of water levels.

4. Section 4.2, p. 10

It is recommended that discrete ground-water samples be acquired at specified vertical intervals (e.g., 10 ft intervals) during well installation using a tool such as a Hydropunch. The objective of this study would be to better define the vertical distribution of aqueous-phase contamination. This information may be useful in evaluating screened intervals for these wells and, potentially, effectiveness of remediation. Valuable information appears to have been obtained from a similar survey previously conducted at this site. It should also be noted that additional well installations may be warranted to further define aqueous-phase contamination, depending on results from these studies.

Response:

4. The results of the previous groundwater sampling using the Hydropunch have been presented in Plates 2 through 7 and Figures 3 through 8. Based on these data, the groundwater monitoring program presented in this plan was developed. No additional information would be gained by expanding the Hydropunch® network.

5. Section 5.1, p. 13

It is suggested that the sampling frequency for the new wells be more frequent than the annual basis proposed for some of these wells. A higher initial frequency, such as quarterly for one year, would allow establishment of a better data base with which to compare potential trends during remediation.

Response:

5. Based on the results of sampling following installation of the new wells, a change in the frequency of sampling will be considered. Wells that are intended to document the performance of the containment system obviously will be sampled more frequently than those intended only to verify the extent of the plume. Increased frequency of sampling will not add information of value in evaluating performance relative to the AOC requirements.

6. Table 2, P. 14

It is noted that the list of constituents does not include 1,2-dichloroethane and chloroethane. These compounds are potential degradation products of the compounds which have been detected in ground water. Although these constituents have not been detected in the samples collected to date, it is suggested that they be included in the list of analytes on a routine basis (e.g., annual, or biannual).

Response:

6. The organic compounds 1,2-dichloroethane (1,2-DCE) and chloroethane will be added to Table 2.

7. Plate 1

Based on the contours, ground-water quality data presented on these maps appear to be interpreted as two isolated areas of contamination located in the eastern and western portions of the site. A more plausible interpretation is one continuous plume that is not well defined in this area.

Response:

7. The contours shown on Plate 1 through 7 are not intended to suggest that there are isolated areas of contamination. The contours represent interpretations of the location of specific concentrations (5 $\mu\text{g/l}$ for the Total VOC maps in Plate 1 and the MCL for the individual compounds in Plates

2 through 7). It is agreed that between the isoconcentration lines there may be concentrations of certain compounds not indicated on the maps.

Responses to Comments from Dr. Luanne Vanderpool:

1. **Section 2.1, New Groundwater Monitoring Wells** The Monitoring Plan proposes to install 12 additional monitoring wells. This is somewhat less than USEPA requested in the March 20, 1995 meeting. It is stated (second paragraph, page 4) that U.S. EPA agreed during the site visit to two wells east of the bridge and one well to the south GSS. While I do acknowledge the difficulty with access in one of the locations south of GSS where we had suggested a well, I did not make any such agreement.

The proposed monitoring network will reasonably cover the lateral extent of the area of contamination with the exception of the eastern and southeastern portion of the site. To improve coverage at the east end of the site, proposed well GSS-MW3 should be moved north approximately 50 feet, locating it along the east side of Cherry Street east of MW-3. A two well cluster (one well screened slightly below the water table and the second well screened deep) should be placed at the southeast corner of the site, on the east side of Cherry.

Unfortunately, questions remain regarding the vertical extent of contamination. This monitoring plan proposes two of the new wells to be screened deep and the other 10 to be screened slightly below the water table. The two deep wells will be installed next to existing wells (MW-2 nest and MW-4 nest). This will allow an evaluation of vertical gradients at a location adjacent to extraction well GSS-EW2 and at a location about 150 feet west of the extraction well. Although these two locations will assist with evaluating the effectiveness of GSS-EW2 capturing groundwater from deeper in the aquifer the picture remains incomplete. Two additional deep wells are needed, the deep well mentioned previously as part of the 2 well cluster located off the southeast corner of the site and a deep well nested with MW-1 (in the northeast portion of the site).

The remaining 10 proposed monitoring wells will be single wells and will yield no information on vertical distribution. Even with implementation of this plan, there will remain a need for additional information on vertical extent of contamination. The Monitoring Program Plan proposes to screen these wells 5 to 10 feet below the water table. To confirm the assertion that this zone represents the zone in which highest concentration levels occur at the new monitoring well locations, and to fully characterize the vertical

variation in concentration levels, the new well locations should be vertically sampled (collect groundwater samples at 10 foot vertical intervals during well installation) . Assuming that concentration levels are highest in the upper portion of the aquifer, the new shallow wells should be constructed as planned. If the highest level of contamination at a location is not found in the upper portion of the aquifer, then an additional well should be constructed, screened in the zone of highest concentrations (creating a well nest with the shallow well) .

Response:

1. The proposed locations would place three groundwater monitoring well locations covering a horizontal distance less than 200 feet. As an alternative, it is proposed to leave two wells on the eastern margin of the site as previously proposed. Within 100 feet west of the proposed location of GSS-MW3, a boring was made and groundwater collected using a Hydropunch sampling device (HP-4, Figure 1, Plates 2 through 7, Figures 3 through 8). Sample results indicated the presence of only 1,1,1-TCA at concentrations well below the MCL of 200 $\mu\text{g/l}$. The highest concentration (80 $\mu\text{g/l}$) was detected at an elevation of approximately 880 feet above mean sea level (amsl) (Plate 4, Figure 5), or 20 feet below the water table. Concentrations decreased with depth. Although not warranted based on these data, a deep well will be paired with proposed location GSS-MW3 with a screen elevation of approximately 840 to 830 feet amsl. The value of this well is in the hydraulic information that it may provide for the deeper part of the aquifer east of GSS-EW2.

As agreed, a single deep well will be installed adjacent to GSS-MW3. At the location GSS-MW11, a boring was made and groundwater collected using a Hydropunch sampling device (HP-3). Sample results indicated the presence only of 1,1,1-TCA concentrations well below the MCL (Figure 1, Plates 2 through 7, Figures 3 through 8). These results do not support the need for multiple well screen depths at this location.

As discussed in response to Mr. Acree's Comment # 4, a Hydropunch study has already been conducted on the Site to aid in the design of the groundwater extraction system currently in operation and in developing the monitoring program. The locations chosen for permanent monitoring wells are indicated by the data gathered during the initial investigation which indicate without exception that the majority of the contaminants detected are located in the first thirty feet of the aquifer, and that lower concentrations of certain compounds are detected deeper in the

aquifer. The additional sampling as proposed will provide no added value to the operation or in evaluating the performance of the monitoring system proposed in this plan. Each location proposed has a specific purpose based on presented data. Based on the results of initial sampling, the monitoring system will be evaluated to determine if it meets its intended purpose.

2. **Section 5.1, Groundwater Sampling Parameters and Frequency.** The monitoring plan proposes to analyze only for volatile organic compounds, not for semi-volatiles or metals. Bis-2(ethylhexyl)phthalate is being found in the treatment system influent. It is asserted that this is attributable to the plastics in the treatment system piping. Since semivolatiles were detected in the soils at this site I recommend a round of groundwater sampling with analysis for SVOCS; if there remains no detections of SVOCS, then this analysis need not be continued.

Metals (lead and thallium) have been detected occasionally in the treatment system influent. The workplan argues that since these detections were infrequent and did not increase with the pumping of GSS-EW2 there is no need to sample groundwater for metals. Consistent detections of iron and manganese exceeding SMCLs are dismissed as probably representing background conditions (and being of little concern since the standards reflect aesthetic considerations, not health effects). Given the past history of this site, it is possible that there are metals at the site and there may be high levels of some metals in the groundwater in some areas. Due to dilution within the extraction system, these high levels may be seen only as infrequent detections. For comparison an examination of VOC levels in the treatment system influent shows detections at considerably lower levels than were found in some of the monitoring wells, as well as inconsistent detections and levels through time. Since neither groundwater or soils at this site have been analyzed for metals, it is premature to assert that metals do not need to be sampled in the groundwater. Groundwater should be sampled with metals analysis. If there is found to be no metals contamination associated with this site, such analysis could be discontinued.

Response:

2. On January 30, 1991, and again on March 26, 1991, groundwater samples collected by the Ohio EPA were analyzed for semivolatile organic compounds (SVOCS) at monitoring well locations including MW-4 and MW-2. These sampling locations are among those that have indicated

concentrations of highest impact of VOCs in the groundwater. Yet, the U.S. EPA stated in the Screening Site Inspection Site Evaluation of November 29, 1993, that "No positively identified SVOCs were detected in any of the samples..." and indicated that only a few tentatively identified compounds might be inferred. Given the high concentration of VOCs in groundwater samples from MW-2 and MW-4, it would be expected, if SVOCs were released into the aquifer, that they would have been detected at monitoring well locations MW-2 and MW-4. The lack of any detection of SVOCs in these wells and other wells supports the conclusion that SVOCs have not been released into the groundwater at the Site.

If any SVOCs have been released into the environment, they are contained only within the Source Area Soils. To repeat, there is no evidence of SVOCs in the aquifer. The PRP Group could, during characterization of the soils, do random sampling and analysis for SVOCs to eliminate any need for further consideration of SVOCs at the Site. Based on the results of the analyses, if SVOCs are detected, the need for consideration of SVOCs in the Source Area Soils for SVOCs could be discussed.

Since operation of the groundwater extraction and treatment system began, the PRP Group has maintained hydraulic control of the groundwater at the Site and between the Site and the Village wellfield. Sampling of the system's influent has indicated the possible presence of one SVOC - bis(2-ethylhexyl)phthalate - with concentrations ranging from 0.9 to 45 $\mu\text{g/l}$. Most of these detections have been estimated at or below 10 $\mu\text{g/l}$ and are routinely detected in the laboratory blanks at similar concentrations. As reported in the January 31, 1995, Aquifer Pumping Test Report submitted to the EPA, bis(2-ethylhexyl)phthalate, if it were present, could be attributed to the plastics used to construct the treatment system piping and it is unlikely that this compound exists in the groundwater. The lack of significance of the possible presence of bis(2-ethylhexyl)phthalate is further supported by the routine detection of this compound in the laboratory blanks. No other SVOCs have been detected through seven sampling events to date.

As part of the waste characterization for disposal of soils stockpiled in roll-off containers at the Site, chemical analysis was conducted of the soils and reported for Base/Neutral Acids (SW846 8270A) and TCLP Semivolatile Organics (SW846 8270A). These results were provided to the U.S. EPA on June 1, 1995, requesting approval for disposal of these soils. The results indicate that there were no semivolatile organic compounds detected in these soils that were stockpiled

in four roll-off containers during the site construction activities in areas that are suspected of being impacted by past activities.

Because SVOCs have not been detected in the groundwater sampling events or the treatment system influent and effluent (with the single insignificant exception discussed above), there is no indication that SVOCs have been released into the groundwater and there is no technical justification for requiring the monitoring of SVOCs. The PRP Group will continue, however, to monitor the influent and effluent for SVOCs. If there are any significant detections of SVOCs at any time, monitoring the groundwater at the Site for SVOCs will be evaluated and could be discussed with the U.S. and Ohio EPA.

The GSS PRP Group disagrees with the statement that, "Given the past history of the site, it is possible that there are metals at the site and there may be high levels of some metals in the groundwater in some areas." In fact, there is no evidence in the past history of the site that would suggest that metals, such as those found in plating wastes, were sent to Granville Solvents, Inc. during its operation.

Treatment system influent and effluent water samples have been collected since the start of operation on December 20, 1994. As stated in the Groundwater Monitoring Program Plan submitted on January 31 and April 12, 1995, only iron and manganese concentrations have been consistently greater than drinking water standards in the influent and effluent samples. These metals exceed only the Secondary Maximum Contaminant Levels, or SMCL, which are used only when evaluating aesthetics, such as taste and/or staining of fixtures, rather than health effects. Thallium and lead were also detected only in the influent and effluent water samples collected from the treatment system. Thallium exceeded the MCL in four out of fourteen samples whereas lead exceeded the U.S. EPA's Treatment Technique Action Level for Tap Water in only one sampling (January 3, 1995). Since that sample, lead has not been detected at concentrations above the action level.

Also, no changes have occurred in metal concentrations since the start of pumping of the most highly impacted groundwater from GSS-EW2 on January 3, 1995. If metals had been released to the groundwater from the Site, they would be expected to occur at their highest concentrations at the source area where extraction well GSS-EW2 was installed. At the time of the system start up, water was initially pumped, and the influent sampled, from GSS-EW1, located near the

leading edge of the plume. On January 3, 1995, GSS-EW2 was added to the system. The influent metals concentrations after GSS-EW2 pumping began showed no distinct change from earlier data with only GSS-EW1 pumping. Similarly, no notable change in metals concentrations occurred when the pumping rate for GSS-EW1 was later reduced. If metals had been released to the groundwater, one would expect some changes in the influent concentrations when pumping of GSS-EW2 began, and also when the rate of GSS-EW1 was reduced. These did not occur.

Samples collected on July 5, 1994, from Village production well PW-2 indicate iron concentrations of 1300 $\mu\text{g/l}$ and manganese of 130 $\mu\text{g/l}$. In water collected from monitoring well MW-5, iron concentrations were 92 $\mu\text{g/l}$ and manganese concentrations less than 10 $\mu\text{g/l}$.

As part of the waste characterization for disposal of soils stockpiled in roll-off containers at the Site, chemical analysis was conducted of the soils and reported for TCLP Metals (SW846 1311/6010A/7470 for mercury). These results were provided to the U.S. EPA on June 1, 1995 requesting approval for disposal of these soils. The results indicate that copper was detected at a maximum concentration of 0.27 mg/l, zinc was detected at a maximum concentration of 0.94 mg/l, and barium at a maximum concentration of 1.8 mg/l in these soils that were stockpiled in four roll-off containers during the site construction activities in areas that are suspected of being impacted by past activities.

Based on the data, there is no evidence to support the need for including metals as part of the routine analysis at the Site. There is no identifiable source for metals at the Site. It is not appropriate to begin searching for elements and compounds that have not been documented as having been sent to this facility.

3. Section 5.2, Groundwater Sampling Procedures

During well purging (Section 5.2.3) dissolved oxygen and turbidity should be monitored along with specific conductivity as the primary purge stabilization parameters. These parameters should be measured using a flow through cell. Temperature and pH, while potentially useful data, are generally insensitive purging criteria.

Section 5.2.4 proposes sample collection either with dedicated pumps or with bailers. I strongly recommend against the use of bailers (due to problems with excessive turbidity and aeration of samples). The use of a top emptying bailer (necessitating pouring of the sample)

is completely unacceptable; a bottom emptying device should be used (if bailers are used at all!).

Response:

3. It is considered appropriate and standard practice to monitor the parameters of pH, temperature, and specific conductance to aid in determining if the water in a monitoring well has been adequately purged and if the water collected from the well is representative of the water in the aquifer. It is commonly held that stabilization of these three parameters is sufficient to determine if the well has been adequately purged. No changes will be made to these procedures.

It is agreed that top filling/discharge bailers are not appropriate for sampling groundwater particularly when sampling for volatile organic compounds. The text will be modified to state that bottom filling/discharging bailers will be used exclusively in the collection of groundwater samples for VOCs.

4. **Plate 1**

The VOC concentrations shown in this plate imply a site with 2 separate plumes. This conclusion is not supported by existing data (there are not nondetects between the two regions) . This figure should be redrawn to indicate the more plausible conceptualization of a continuous plume with uncertainty in the center.

Response:

4. As stated in response to Mr. Acree's Comment # 7, the contours shown on Plate 1 through 7 are not intended to suggest that there are isolated areas of contamination or separate plumes. The contours represent interpretations of the location of specific concentrations (5 $\mu\text{g/l}$ for the Total VOC maps in Plate 1 and the MCL for the individual compounds in Plates 2 through 7). It is agreed that between the isoconcentration lines there may be somewhat higher or lower concentrations of certain compounds but, in most cases, these too would be below the MCLs.